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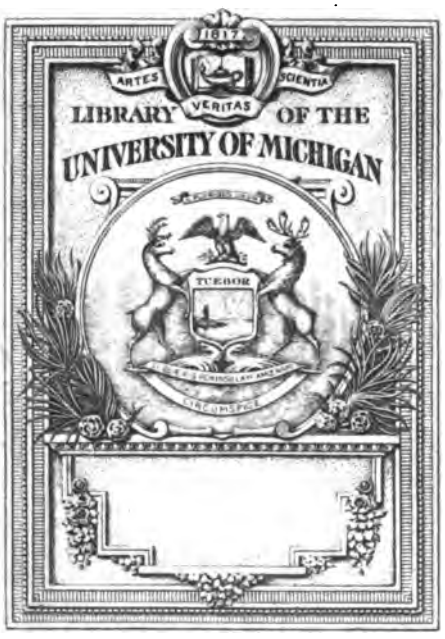
THE TRUE METHOD
OF
TONE PRODUCTION

J. VAN BROEKHOVEN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OF
TONE PRODUCTION

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BY

J. VAN BROEKHOVEN

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ANALYTICAL SYNOPSIS

OF THE

NEW VOCAL METHOD

In presenting this *New Vocal Method to* the musical public I am confident that what I offer in this work is entirely original in subject and treatment. It is original in subject in that I demonstrate a very important feature of the vocal function in singing hitherto overlooked, and therefore totally neglected by the vocal teachers, as well as by the medical profession. It is original in treatment since I present the evidence of these unfamiliar vocal functions in conjunction with a detailed description of the physical laws underlying their action in the production of vocal tone, by the aid of specially designed illustrations, musical examples, and practical exercises.

The evidence here submitted will establish a complete refutation of the old and generally accepted error that *tone is produced by the vibration of the vocal cords.* I hold that the vocal organ belongs to the class of wind instruments of the horn type; in which the same three factors are active in the production of tone, viz:

1. The breath or air supplying factor;
2. The tone generating factor;
3. The tone deflecting factor.

In the co-relation of these three factors in tone production *the vocal cords are not responsible for the production of tone by vibrating.* The vocal cords merely serve as *air converters* — or air current manipulators, in the same manner as the lips of the horn player act in establishing the proper opening needed for the particular air current producing a certain tone on a trumpet.

What I here offer is the result of six years of careful, painstaking investigations, and practical application of the new principles to vocal training. I have tested every new phase and detail of the unfamiliar vocal functions presented from my new point of vantage by various experiments, in which my practical knowledge of wind instruments employed in the orchestra was of the greatest assistance. So that the analogical physical principles were well demonstrated before they were embodied in this work.

That anything new could be presented at this late date after the greatest singers have been successfully trained by what is known as the *Italian Method* seems inconsistent. The Italian vocal teachers of the eighteenth century owed their success to their practical musicianship, combined with personal experience as singers, obtained during many years of laborious study and vocal practice — *but not to any positive knowledge of the physical conditions and functions of the vocal organ as a whole.* In this direction the medical profession as well as the vocal teachers of the present day are as much in the dark as were the Italian vocalists of old. The invention

of the laryngoscope by Manuel Garcia in 1849 has not established any positive knowledge of value to the vocal teacher in securing more reliable information and practical principles of voice training, due to the fact that but an incomplete view of the inner larynx during singing is to be had by the use of the laryngoscope.

Garcia himself became aware of the limited knowledge furnished by the laryngoscope; forty years after its invention he says: "I began with other things, but as years passed by I discarded them as useless, and I now speak only of actual things and not mere appearances." Yet vocal teachers have built their methods on the insufficient knowledge obtained by the laryngoscope, and that other false theory propounded by Dr. Lehfeldt in 1835, namely, that *vocal tone is produced by the vibration of the vocal cords* — which he proclaimed to the world after a very superficial investigation of a dead larynx. Upon these false premises and insufficient information modern investigators have put forth the most absurd claims, which — to the detriment of voice culture — have been blindly accepted by the medical and musical profession. The following questions, formulated to point out some of the physical inconsistencies of these claims, will demonstrate these facts.

1. How can the thin edges of two bundles of muscles known as the vocal cords (Fig. 6, *b*, *b*), by vibrating, produce one absolutely pure tone, identical in pitch and quality?

2. How can the mere edge of a bundle of muscles forming a curve or concave line (Fig. 6, *u*) be strung sufficiently tense to produce a tone by the vibration of the curved edge?

3. How can the thin edges of two opposite bundles of muscles vibrate so as to produce tone when their two extreme ends are pressed together, the thin edges forming an elliptical opening between them? (Fig. 6, *u*).

4. How can the so-called vocal cords — which (as Dr. Mackenzie states) are not strings, but folds of membranous muscular tissue, forming a bevelled mass towards the rear — vibrate so as to produce a tone like a vibrating string?

5. How can the whole length of the vocal cords vibrate as one unit when one third their length is composed of gristle (Fig. 6, *u*), and the other two thirds of ligaments?

6. How can the whole singing range of the male and female voice, of almost five octaves, be produced by the vibration of the thin edges of the two vocal cords, not even one inch in length?

7. How is it possible for altos with longer vocal cords than tenors to possess a natural higher vocal compass than tenors, if the length of the vocal cords condition the pitch?

8. How is it possible for old men and women, who always sing and speak in falsetto, when the muscles of the vocal organ have become weak and infirm, to do so if the falsetto tones — as claimed — are produced by a firm contraction and a high rate of vibration of only a part of the vocal cords?

For lack of space it is necessary to forego further explanations concerning the course of my investigations and experiments in discovering the true functions of the vocal organ in singing. I shall now present the results obtained, in a manner as clear and concise as possible. I shall demonstrate the essential features of my discovery in three divisions, viz.:

I. The nature of the new method;
II. The nature of the physical elements;
III. The nature of the vocal functions.

I.

THE NATURE OF THE NEW VOCAL METHOD.

A - New Theory of Tone Production. — The theory that vocal tone is produced on similar lines with the physical function active in producing tone on a trumpet was first propounded by Fabricius in 1537; again in 1776 by the Frenchman, Detrochet; and in 1882 by the Englishman, Dr. Illingworth. No practical demonstration of details has however been furnished by any of these claimants.

My own personal investigations established the hitherto unknown fact that the process of producing tone on a trumpet has its counterpart in the vocal organ. Not only as to the similarity in both of the existing cavities and apertures, but also as to the nature of the physical functions in producing tone. The similarity of the inner space form of the trumpet mouthpiece — as pressed against the lips of the player — with that of the vocal organ is extraordinary, as may be seen by comparing Fig. 1 with Fig. 2.

FIG. 1 — TRUMPET MOUTHPIECE.

a, mouth cavity; *b,b*, lips; *c*, cup; *d,d*, edges of outlet; *e*, tube; *f*, expansion of tube.

On this small metal mouthpiece — the cavity or cup space (*c*), as well as the narrow outlet (*dd*), and upper tube (*e*), being permanent — a cornet player is nevertheless able to produce from eight to ten or more tones of a scale, merely by the action of the lips (*bb*), and the control of the air current in the mouth (*a*). The lips produce the proper opening to direct the air current into the cup space (*c*); and the action of the tongue controls the volume and current of the air expelled from the lungs, by establishing various forms of the mouth tube (*a*). The tone is produced *not by the vibration of the player's lips* — as Helmholtz claims — but by the nature of the air current, *its form and force*, and the peculiar *whirl* and *friction* of the air current as it enters the cup (*c*), and is forced out at the upper outlet (*dd*), as sounding air, or tone; conditioned in pitch by the nature of the cavities, apertures and force of the air current. That this mode of producing tone is based on physical principles, and is not due to the vibration of the player's lips, or thin edges of certain parts — as generally claimed — I have proof positive, in that I have produced tone in the manner described on wax, rubber and cane, as well as wood and metal. This would be impossible if the tone produced were the result of the vibration of the lips, or edges (*bb*), as claimed by the old method.

The size and form of the cup (*c*) of the mouthpiece has a great influence on the pitch, quality and volume of the tone produced on a trumpet. This fact is well known among practical trumpet and other brass instrument players. The larger the dimensions of the cup the lower will be

the pitch of the tone; and the smaller the dimensions of the cup cavity the higher will be the pitch of the tone; the quality and volume will vary in proportion.

B - Larynx Cavities. —Now in that the vocal organ is composed of very pliable

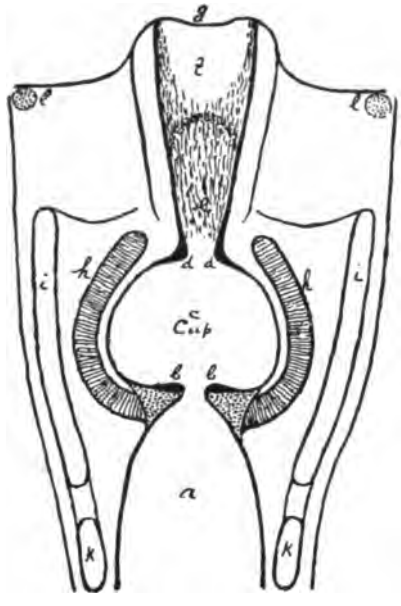


FIG. 2 — LARYNX WITH OPEN "CUP."
Producing the Chest Register.

a, trachea; *b,b*, vocal lips; *c*, cup; *d,d*, ventricle bands; *e*, tube of larynx; *f*, vestibule; *g*, epiglottis, lid; *h,h*, muscles supporting the walls of the cup; *i,i*, shield cartilages; *k,k*, ring cartilages; *l,l*, tongue bone.

parts — muscles, ligaments and tissues — it possesses the ability to change its inner larynx space and apertures to any proportion the singer may desire — according to the limitation of the physical conditions of his vocal organ. Compare Figs. 2 and 6.

The analogy existing between the form of the inner larynx space (Fig. 2) with that of the trumpet (Fig. 1) is certainly convincing evidence of their similarity in functions. The trachea or windpipe (*a*) controls the air current before it reaches the vocal lips (*b, b*), which — by the nature of their opening — produce the required air current as it enters the cup (*c*) or inner larynx cavity. The upper outlet from the cup is controlled by the two so-called false vocal cords (*d, d*), or pocket bands, which are extremely pliable, in that they may be drawn up, as in Fig. 2; or assume a lower position, as in Fig. 3; or drop down over the vocal cords, as in Fig. 4. By this action of the flexible pocket bands each vocal organ has the ability to assume three different proportions of the inner larynx cavity or cup, which also brings about three different qualities of vocal tone, designated by the term *registers*.

C - Origin of Registers. — It is at present as much a mystery to the medical and musical profession as to what constitutes the registers in the singing voice, as is the origin of tone production. From the present point of view the mystery disappears. The action of the pocket bands (Fig. 2, *d, d;* Fig. 6, *d, d*), in establishing various dimensions of the cup (Figs. 2, 3, 4, *c*), are responsible for the change in the quality of the voice which vocal teachers designate as registers.

1. Any singer having large pockets (Fig. 6, *c, c*), with a proportionate expansion of the other parts of the vocal organ, will produce low tones, if he is able to establish and maintain an extended form of the cup — as indicated in Fig. 2, *c*. The quality of tone produced in this expanded form of the cup is rich, full and deep, and is distinguished from other tone qualities as *chest tones*. These chest tones are obtained only in a large expanded form of the cup cavity, which constitutes the physical conditions establishing the *chest register*, as in Fig. 2.

2. A series of low vocal tones may be produced in this chest register; but as higher tones require a smaller proportion of the cup, the position of the pocket bands (*d, d*) changes, and brings about a smaller, more medium, cup form, which also

causes a change in the quality of the tone produced. This medium cup form consequently establishes the physical conditions of the *medium register*, as illustrated in Fig. 3.

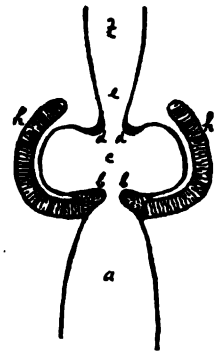


FIG. 3—LARYNX WITH MEDIUM "CUP."
Producing the Medium Register.

The quality of the tone produced in the medium register is designated as *medium tone*, and is much less full in volume, and less rich in quality, than the chest tones. A series of tones of the same pitch may be produced in the *chest* or *medium register* of some singers, establishing two distinct qualities of vocal tone. The nature of the cup proportion is partly responsible for this double production. Furthermore, the change in the size of the apertures formed by the vocal lips (*b*, *b*), and the pocket bands (*d*, *d*), combined with the nature of the volume and force of the air current manipulated in the trachea (*a*), are equally important phases, active in the physical process of producing this double series of tones.

3. The third change in the proportions of the cup form takes place when the false vocal cords, or pocket bands (Fig. 3, *d*, *d*), relax, or drop down towards the vocal cords below (Fig. 4, *b*), thereby almost obliterating the cup cavity, or dividing it into a left and right section (Fig. 4, *c*, *c*).

The closed form of the cup in Fig. 4 produces the highest tones of every voice, which are designated as *head tones*, or *falsetto tones*. The physical function producing these high tones is recognized as the *head register*, or *falsetto register*.

Note. The only reliable information obtained of the functions of the inner larynx by the use of the laryngoscope are the facts just stated, namely: that in the production of the falsetto tones the pocket bands approach each other towards the center (*e*), and drop down over the vocal cords, so as almost to touch them (Fig. 4, *d*, *d*, — *b*). These facts have been observed by French,

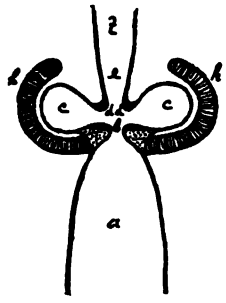


FIG. 4—LARYNX WITH SHALLOW "CUP."
Producing the Falsetto Register.

English and German throat specialists. My own investigations corroborate their evidence. I have further established the facts that a full and large tone is obtained by a large cup; and that *tones of the same pitch* may be produced by a smaller cup; a change in the air current; or a smaller opening of the apertures formed between the lips (Fig. 3, *b*, *b*), and the outlet from the cup (Fig. 3, *d*, *d*). These physical changes are observed by the singers themselves, and can even be felt by placing the finger-tips over the two sides of the Adam's apple of the singer while singing. I must again emphasize the statement that what I have so far presented are facts demonstrated by my various experiments. They are not theories, but results of practical tests, which I shall now confirm by the physical functions of the vocal organ in the production of tone.

II.

THE NATURE OF THE PHYSICAL ELEMENTS.

Of the three factors active in the production of tone on a trumpet, and the vocal organ alike — mentioned at the beginning of this synopsis — the first and most essential is the breath, or air-supplying factor, presented in Fig. 5.

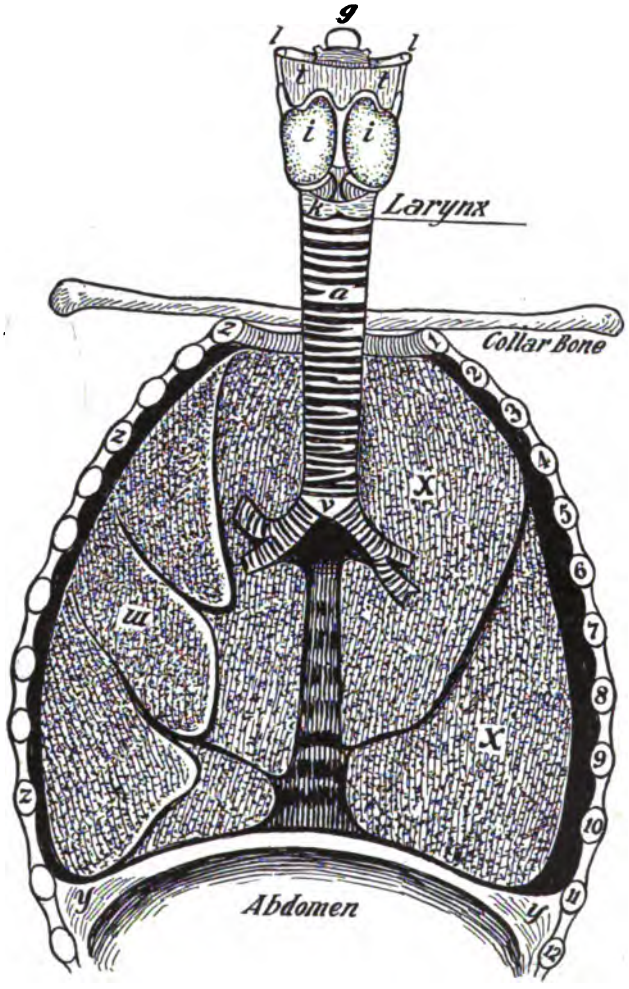


FIG. 6. — THORAX — TRACHEA AND LARYNX.

THORAX, or *chest* — *z*, ribs; *w*, *x*, lungs; *y*, diaphragm
TRACHEA, or *windpipe* — *a*, rings; *v*, bronchial tubes.
LARYNX, or *voice box* — *k*, ring cartilage; *i*, *i*, shield cartilage; *t*, *t*, membranous tissue; *l*, *l*, tongue bone; *g*, epiglottis.

D - The Breath-Supplying Factor is the windchest and bellows of the vocal organ.

It includes the trachea and the thorax.

1. The **THORAX** or *chest* is confined on each side by twelve ribs (*z*), which by their capacity for expansion and contraction increase and diminish the size of the chest cavity, and consequently thereby increase and diminish the amount of air to be stored in the cells of the right (*w*) and left lobe (*x*) of the lungs.

2. The **TRACHEA** or *windpipe* (*a*) is a tube connected with the lungs, is about four and a half inches in length, and is composed of about eighteen rings. These are formed for the most part of gristle; joined at the back by fibrous membrane (Fig. 7, *n*), which permits an expansion and contraction of these rings; thereby enabling this tube to increase and diminish its width throughout its whole length. The trachea divides at the lower end into two smaller tubes, called bronchial tubes (*v*), which enter into the right and left lung.

3. The **DIAPHRAGM** or *midriff* is a powerful but flexible muscle, dividing the chest from the abdomen (*y*). It is at the same time the bottom of the chest cavity, and the roof of the abdomen. It has the form of a reversed basin, with the curved part upward, which is pressed downwards on the abdomen when the lungs become filled with air. But in the act of expelling the air, the diaphragm is the most active factor, in that this powerful muscular fold presses upwards against the lungs, thereby forcing the air in the lungs out into the two bronchial tubes (*v*), where the two different air currents combine in the larger tube of the trachea. Here the air current is controlled and properly formed by the tractable rings of the trachea, before it reaches the vocal lips (Fig. 6, *b*, *b*), which form the entrance into the cup cavity of the larynx above.

Note. The proper management of the breath requires a perfect command of the muscles controlling the separate parts. Each part has its own set of expanding and contracting muscles, which must be independent of each other's movements. The muscles of the ribs, for instance, may be active in maintaining the utmost expansion of the chest cavity, while the muscles controlling the lungs are relaxed, and the muscles of the diaphragm are active in expelling the air from the lungs. Or, the diaphragm may be inactive or neutral, while the expanding muscles of the ribs and lungs are active in a mild degree of gradual relaxation, causing a weak escape of air from the lungs, which may necessitate the closing of the trachea, by a contraction of the muscles diminishing the width of the rings. These various muscular functions must be understood and carefully trained by judicious exercises apart from singing. However, their proper application in artistic singing can be obtained only by vocal exercises and personal experience.

E - The Tone-Generating Factor of the vocal organ is confined to the *inner larynx*, the essential features of which are visible in Fig. 6.

The view here presented permits us to see the inner aspect of the upper conical-shaped extremity of the trachea (*a*, *m*), where it joins with the inner larynx space; showing the vocal cords (*b*, *b*), and the glottis (*u*); the left and right pocket or ventricles (*c*, *c*), with the pocket bands, or false vocal cords (*d*, *d*) higher up. Above this inner larynx space — which is the tone-generating factor proper — is seen the form of the inner larynx tube (*e*), and the vestibule (*f*), or entrance into the larynx, Fig. 6. And at the upper end we perceive the position of the epiglottis, or lid (*g*), of the larynx, with part of the rim (*α*) of the larynx where it opens into the lower pharynx cavity (Figs. 8, 9).

The inner parts of the larynx here

enumerated are protected by a shell or encasing, consisting of the ring cartilage below (*k*), and the shield cartilage (*i*) further up. The upper part of the inner larynx space from the upper edge of the shield (*i*), to the tongue bone (*l*), is entirely composed of membranous tissue and muscles, being supported merely by two sets

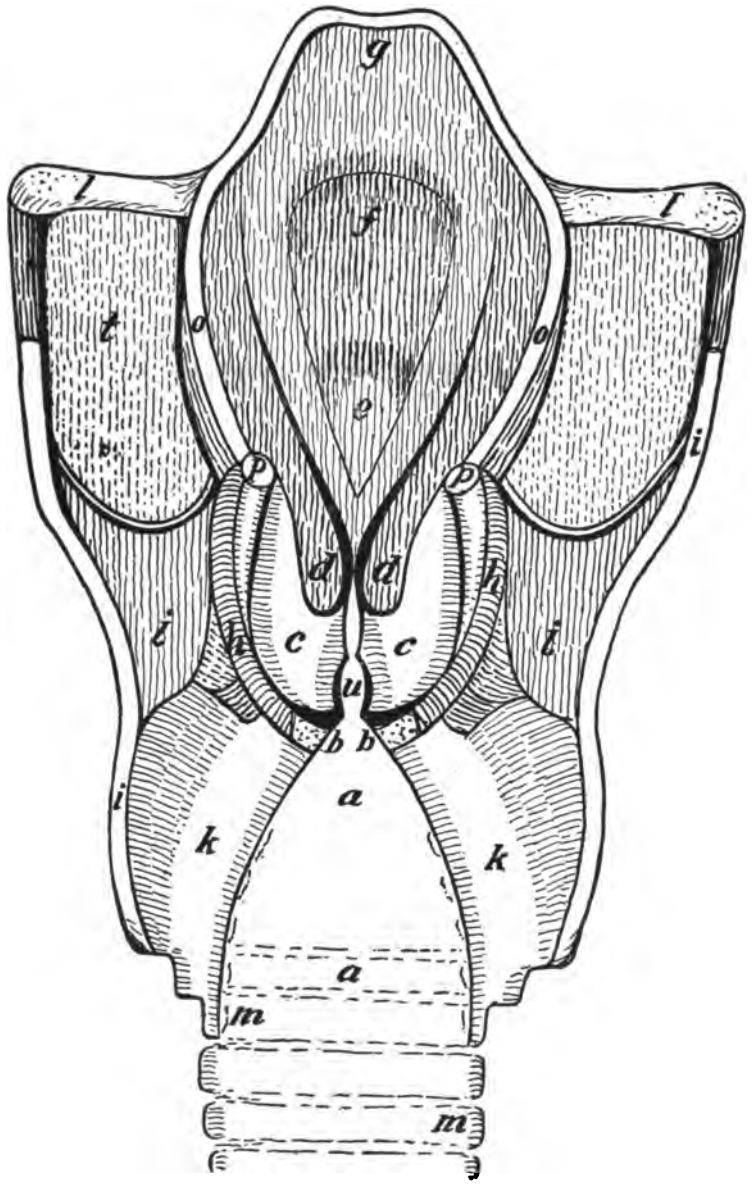


FIG. 6. — INNER VIEW OF THE TRACHEA, LARYNX AND VESTIBULE.

TRACHEA — *a*, tube; *m*, rings.

LARYNX — *k*, ring cartilage; *i*, shield cartilage; *t*, membranous tissue connecting shield with tongue bone, *l*; *o*, outer rim of larynx; *b*, vocal cords; *u*, glottis opening; *c*, pockets, or ventricles; *d*, pocket bands, or false vocal cords; *p*, cartilages of Wrisberg; *e*, larynx tube; *h*, muscles controlling outer walls of pockets.

VESTIBULE — *f*, *e*, cushion; *g*, epiglottis; *o*, rim.

of thin cartilaginous wedges on each side, running from the rim (*o*) downwards; and of which the cartilages of Wrisberg (*p*) constitute the upper set, and the cartilages of Santorini (Fig. 7, *q*) the lower set. See Fig. 6, 7.

This membranous upper part — just described — permits of the lower part of the larynx to be drawn up about half an inch towards the tongue bone, or root of the tongue (*l*). This function of the larynx — which is always noticeable in the act of swallowing — is also frequently employed in singing, as will be observed further on.

F - Function of the Trachea. — In the emission of vocal tone the function of the trachea (Fig. 5, *a*) is of the greatest importance, in that the width of its tube at the upper end must be diminished — by a contraction of the rings (Fig. 6, *m*) — in the production of high tones, and must be expanded to the utmost, beyond its normal relaxed state — in the production of very low tones. Furthermore, the function of the bronchial tubes below (Fig. 5, *v*) is equally important to that of the upper end of the trachea; since it is their duty to control the force of the air current expelled from the lungs (Fig. 5, *w*, *x*), and hinder it from reaching the vocal lips, or glottis (Fig. 6, *u*), in too great a volume and force. *The breath should therefore be controlled at the lower end of the trachea, by the bronchial tubes, and not by the lips of the glottis.*

G - Function of the Vocal Cords. — The term vocal cords is applied to the edges or lips of the two membranous folds constituting the opening of the glottis (Fig. 6, *u*), or lower entrance into the larynx cavity. These lips are composed of two sections, each of a different substance, namely: one third part their length being gristle or cartilage — indicated in Fig. 6 by the broader elliptical opening in the front; and the other two thirds of their length being ligaments — indicated by the longer and narrower rear section at *u*. These two sections may be opened together, as one orifice; or each section may be opened or closed separately. So that two separate openings may be formed at the same time — also *producing two separate and distinct tones at the same time.*

I have stated at the beginning of this synopsis, and also at **A**, in describing the production of tone on a trumpet, that these lips do not produce tone by the vibration of the thin edges — composed of two different substances. Their function consists in forming various degrees of openings necessary to establish certain air currents which, being forced through this peculiarly formed aperture into the larynx cup, generates a tone; conditioned by the force and volume of the air, the different proportions of the cup (Figs. 2, 3, 4, *c*), and the nature of the resonance tube above (Figs. 8-9, 11).

Note. The fact that the two separate openings of the glottis, just described, may also produce two distinct tones at the same time, is a feature of the vocal function never before established by the medical and musical profession; or, if it has been observed, was considered a freak of nature, and no importance attached to it. Dr. Ludwig Turck, in his book, "Krankheiten das Kehlkopfes — Wien 1866" describes two very noteworthy instances of individuals producing two tones at once. On page 478 he cites the case of a man of forty-eight years, who produced two tones at the same time, which alternated between the interval of a second and a sixth. Upon examination it was discovered that on account of a small tumor on one vocal cord the glottic orifice (*u*) was divided into two sections, and consequently emitted two tones. This phenomenon disappeared upon the removal of the tumor. The

other case was that of a woman of thirty-five years, who produced a series of double tones a third apart. It was found that the two vocal cords met in the middle, where the gristly part joined the ligamentous section, hence establishing two unequal sections of apertures, each of which produced one tone — one a low tone and the other a tone a third higher — both sounded simultaneously.

This evidence is most valuable, in that it furnishes proof beyond question to support my theory of tone production, upon which my new vocal method is based. If tone were produced by the vibration of the ligamentous vocal cords, it would be impossible for the woman to emit two tones at once, since the shorter section of the vocal cords is composed of gristle, not ligaments.

H - Pockets and Pocket Bands. — The pocket bands, or so-called false vocal cords (*d*, *d*), are the regulators of the inner larynx space. They are the thick muscular edges or lower ends of two membranous folds, or walls, dividing the inner upper tube of the larynx (*e*) from the outer walls formed by the shield (*i*) on each side of the inner larynx. The spaces formed on each side of the pocket bands (*c*) are called the pockets, or ventricles of Morgagni. The opening to these pockets is immediately above the vocal cords (Fig. 8, *c*), and the pocket bands are the thick muscular lips (*d*, *d*) of this left and right fold (Fig. 8, *d*). These lips or pocket bands are extremely flexible, yet — being very muscular — they may be trained, by the proper exercise, to perform many independent functions during singing. Their action effects two important phases of the inner larynx in the generation of vocal tone, viz.: they regulate the form and dimensions of the cup (Figs. 2, 3, 4, *c*); and they establish the dimensions of the larynx tube above (*e*). The proper proportion of this upper tube — constituting, as it does, the lowest and narrowest part of the resonance tube of the vocal organ — is of the greatest importance; not only in aiding the clear production of tone produced in the cup, but also in obtaining the resonance of the tone as it is transmitted upwards into the pharynx (Fig. 8, 6).

As the **EPIGLOTTIS** (*g*) is directly joined to these folds controlled by the pocket bands, it is obvious that the actions of the epiglottis and pocket bands are responsible for the *quality, volume and resonance* of the tone generated in the cup; for by regulating the form and dimensions of the tube and vestibule (*f*) of the larynx, the tone may be influenced and deflected for good or bad.

The two outer walls of the cup nearest the shields (*i*, *i*) are controlled by a set of very strong muscles (Fig. 6, *h*, *h*), which extend from below upwards as far as the pockets reach. The whole upper membranous part of the inner larynx tube, as also the lower larynx cavity, is controlled by a net of muscles; which, according to Dr. Barclay's estimate, *are capable of producing upwards of sixteen thousand different movements.*

Note. If we consider that each and every muscle of the vocal organ becomes active in one way or another during the act of singing, we can comprehend the necessity for a careful training of every muscular function of the vocal mechanism. It will also be obvious that such a task becomes impossible, if the vocal teacher lacks the absolutely necessary knowledge of the physical functions of every part of this wonderful organism, combined with experience and good judgment.

I - The Outer Larynx. — The larynx as a whole is about two inches in height, and an inch and a half in width. Fig. 7 presents a rear view of the larynx as a

whole, showing the vestibule or upper entrance where it opens into the lower pharynx cavity (Fig. 8-9).

The larynx, as has been stated, is protected by a cartilaginous covering, consisting of *k*, ring cartilage, and *i*, shield cartilage. The ring cartilage (*k*) is loosely connected with the trachea below; and the two upper projecting horns of the shield cartilage (*i*) are loosely tied to the tongue bone (*l*) by membranous tissue and muscles (*t*). The larynx as a whole is therefore suspended from the tongue bone, or root of the tongue, and may move up or down about an inch, more or less. This movement of the larynx as a whole does not, however, in the least interfere with nor influence the functions of the inner larynx.

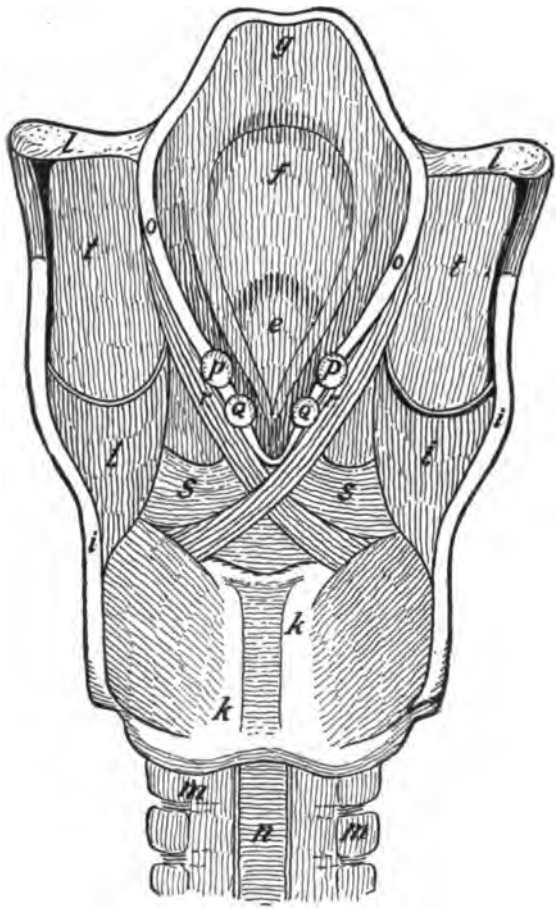


FIG. 7.

TRACHEA — *m*, rings; *n*, fibrous membrane.
LARYNX — *k*, ring cartilage; *i*, shield cartilage; *t*, membranous tissue; *l*, tongue bone; *o*, rim of vestibule; *p*, cartilage of Wrisberg; *q*, cartilage of Santorini; *r*, rim contracting muscles; *s*, muscles controlling vocal cords; *e*, tube; *f*, vestibule; *g*, epiglottis.

The inner larynx can assume any independent muscular function of any of its parts, without being materially affected or influenced by the movement of the larynx as a whole.

The foregoing fact must be well understood to fully comprehend the necessity for a firm and steady muscular control of the inner larynx parts during singing, while the movement of the larynx as a whole is free and flexible. For it is evident — from the view obtained in Fig. 7 — that the inner muscular organism is entirely independent of the gristly covering (*k*, *i*).

K - The **VESTIBULE** of the larynx is as complicated in its structure as it is in its functions. Its inner parts have been described at **H**, but the parts controlling the visible upper end demand an equal attention. The extraordinary provision made by nature for their important functions is sufficient proof of their necessity. The rim (*o*) of the vestibule is controlled by the very powerful band of muscles indicated at *r*. This in itself is not sufficient to contract and diminish the opening, or rather outlet; for it must be emphasized: that the functions of the vestibule — including those of the epiglottis (*g*) — are concerned with establishing the necessary form of the *small resonance tube*, formed in this upper end of the inner larynx; creating thereby the outlet for the tone generated in the cup below.

The rim is further contracted by the converging of the two opposite cartilages of Santorini (*q*), at the lower point of the vestibule; and higher up by the drawing together of the two opposite cartilages of

Wrisberg (*p*). Furthermore, the action of the epiglottis is of the utmost importance, since it serves as a lid to the vestibule or *outlet.*

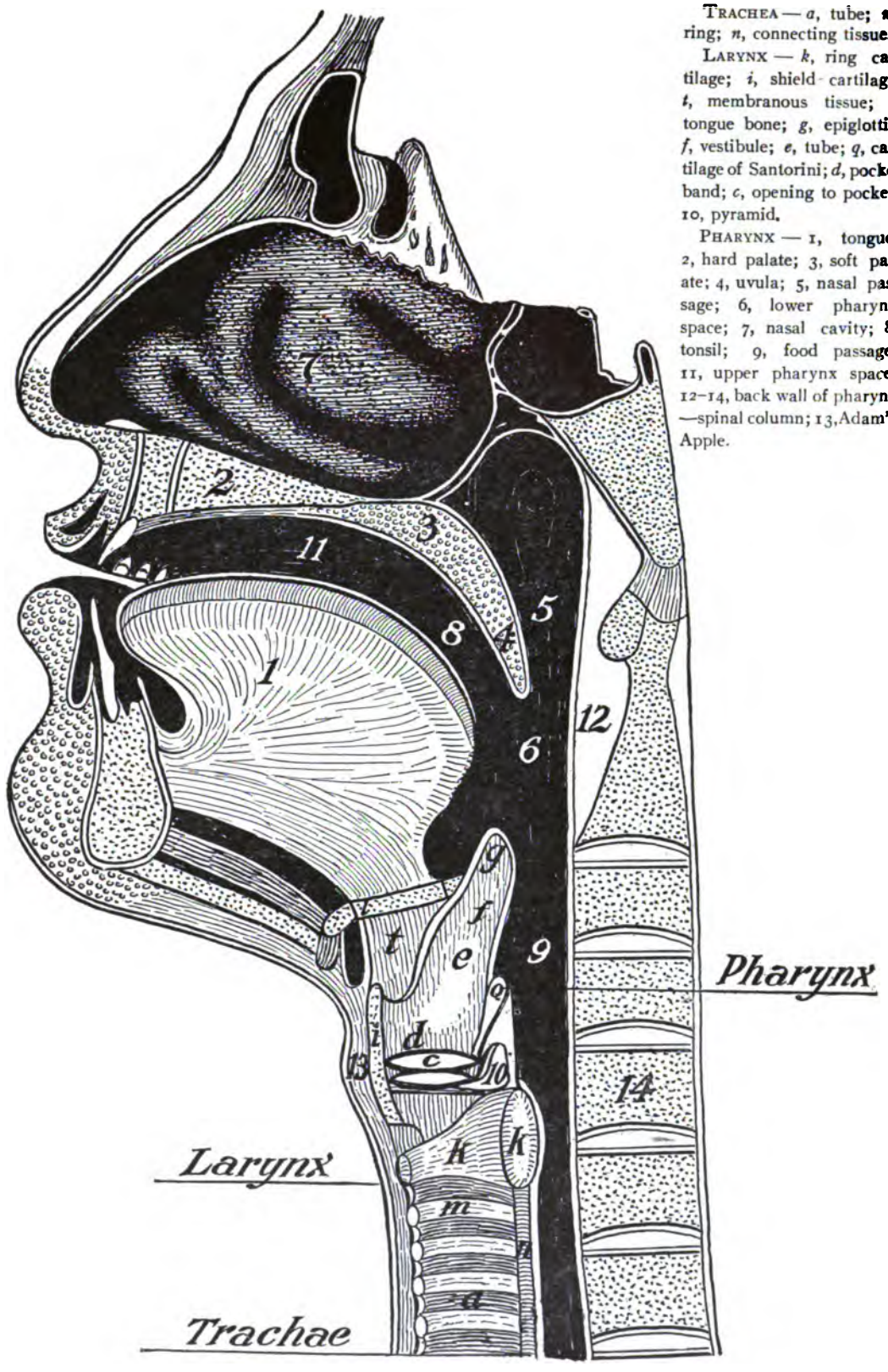
The free movement of the epiglottis (*g*) is frequently hindered by the action or position of the tongue. In that the epiglottis is closely connected with the tongue bone (Fig. 8, *l*) — which is the root or base of the tongue — it is obvious that the movement of the tongue has its influence on the epiglottis. But on the other hand, if the action of the epiglottis is detrimental to the tone produced in the cup, by closing the vestibule too much; or by a lack of muscular energy or power to open the vestibule properly, a certain position of the tongue will also improve the position of the epiglottis. The tongue position in the production of the vowel *U*, for instance, in that the tongue expands the cavity of the lower pharynx (Fig. 8, 6), also pulls up the epiglottis.

Note. The action of the epiglottis is very often to blame for many shortcomings as to the clear emission of the vocal tone. The source of such evils must be sought for by various experiments, in which the action of the tongue or epiglottis can be observed. But as these functions cannot be viewed direct, the ear must decide as to the result of the experiments.

L - The Tone-Deflecting Factor of the vocal mechanism (Fig. 8) is comprehended in the various tubes and cavities located above the *tone-generating section.* This upper section of the vocal organ begins with the narrow upper tube of the inner larynx, formed by the action of the pocket bands and the parts of the vestibule, described at **K**. This short but very flexible tube (*e, f*) establishes the lowest extremity of the *resonance tube* of the vocal organ. Being located directly above the cup, or *tone-producing factor*, the tube is very narrow, but becomes wider at the vestibule, or outlet, into the lower pharynx space (9, 6); increasing in dimensions in the upper pharynx cavity (11), until it reaches its widest extension by the opening of the mouth.

It is apparent that nature intended to establish the acoustic principles in a living being scientifically produced by the form of the trumpet. But nature also created physical conditions apt to obstruct the perfect control of this human musical instrument. To counteract this, our Creator has endowed man with intelligence, judgment, and a musical ear. If the proportions of the resonance tube are imperfectly formed, by the obstructing action of the epiglottis (*g*), the uvula (4), or the tongue (1), the singer has no other means of discovering this than by the perceptive faculty of his hearing. He perceives that something is out of proportion, and his judgment is called into play to assist him in so far as his intelligence will permit him. For *without intelligence, judgment, and a musical ear, singing, as an art, would be as impossible as painting would be to a color-blind individual.*

M - The TONGUE (1) is the essential factor in establishing the required proportion of the resonance tube in the pharynx as a whole. If it is raised too high in the middle, it will close up the upper pharynx cavity (11); and if it lies too low, it may open this part too much. If it presses its lower part or base backward, it will close the lower pharynx cavity (6), or interfere with the function of the epiglottis (*g*). Furthermore, if it touches the soft palate (3), it will oblige the tone to pass out through the nasal passage (5) and the nasal cavity (7). So that *the action of the tongue may be considered responsible for most faults in quality, volume, and resonance of the tone produced.*



TRACHEA — *a*, tube; *m*, ring; *n*, connecting tissue.

LARYNX — *k*, ring cartilage; *i*, shield cartilage; *t*, membranous tissue; *l*, tongue bone; *g*, epiglottis; *f*, vestibule; *e*, tube; *q*, cartilage of Santorini; *d*, pocket band; *c*, opening to pocket; 10, pyramid.

PHARYNX — 1, tongue; 2, hard palate; 3, soft palate; 4, uvula; 5, nasal passage; 6, lower pharynx space; 7, nasal cavity; 8, tonsil; 9, food passage; 11, upper pharynx space; 12–14, back wall of pharynx —spinal column; 13, Adam's Apple.

FIG. 8.

The root of the tongue is as much concerned in this function for good or bad as the upper part. For in that the pillars of the fauces — a muscular fold running down from the soft palate (3) on each side of the tonsils (8) — are connected with the shield (*i*) and the tongue bone (*l*), the action of the base of the tongue would therefore equally influence the upper and lower parts of the vocal organ.

N - The **SOFT PALATE** (3) is a very pliable roof of the pharynx cavity above. In that it rises or falls it is responsible for the form of the resonance tube where it curves upwards towards the mouth opening. The *uvula* (4) is directly connected with the soft palate, and hangs down into the pharynx cavity, immediately in front of the bony wall (12) in the rear of the pharynx.

Being an elongated pendant it frequently hangs down too low, and thereby obstructs the passage, or opens the nasal passage (5) too much. Owing to its muscular nature it may be drawn upwards, out of view; thus closing, more or less, the nasal passage, and at the same time drawing upwards the soft palate with it. So that the rear wall of the resonance tube (12, 14) forms a solid background, and curves forward — in case the uvula and soft palate are drawn up — producing a sort of sounding board midway between the lower (6) and upper pharynx (11). By this function of the uvula and soft palate a perfect resonance tube is established in the rear; which requires but a good position of the tongue to produce a resonance tube similar in form to that of a trumpet.

O - The **PHARYNX** cavity serves therefore as a deflector of the tone produced in the larynx. *Tone is sounding air.* Hence, wherever the breath current — changed into sounding air in the larynx — is able to reach in its outward course, or in whatever directions it is forced, it will be more or less deflected, according to the nature of the cavities and obstructions met with on its passage outward. It is absurd, therefore, to imagine that tone can be thrown into any part of the human anatomy, where it would be impossible for the air current on its way out to reach. The only passage that a tone is able to travel is through the mouth, or the nose. And the latter passage always deflects the tone, associating it with a disagreeable nasal quality. A too great an expansion of the lower pharynx (6), by drawing the base of the tongue forward, produces a hollow guttural tone; while too great a closing of the upper pharynx (11), by raising the tongue too much, will result in a dull tone, without volume and resonance.

Note. The contents of this introductory analytical synopsis concerns more a statement of principles governing my new method of tone production — designed for the benefit of vocalists — than a presentation of minor details for beginners. The latter will be found in division III — *The Nature of the Vocal Functions.*

For the further benefit of singers I present on the following page the *Singers' Alphabet,* specially prepared for this work to illustrate the nature of the changes occurring in the pharynx, or *tone-deflecting factor,* produced by the tongue, lips and teeth, in the emission of the different vowel sounds found in the English language. The chart explains itself; its usefulness will be recognized by every singer.

I have attempted to make the remainder of the work equally lucid and useful. If it should succeed in this object my labors will be rewarded.

The Singer's Alphabet

Position of Pharynx			Vowel Sounds in English Words	Position of Teeth and Lips	
Upper Pharynx Fig. 8–8, 11.					
Most closed in	ee	7	as in eel	Most closed in	ee
Less " "	i	6	" " ill	Less " "	i
" " "	a	5	" " ale	" " "	a
" " "	e	4	" " ell	" " "	e
" " "	a	3	" " care	" " "	a
" " "	i	2	" " high	" " "	i
Normal position					
Open in	A	1	as in car	Open in	A
Upper Pharynx Fig. 8–11.					
More closed in	a	2	" " call	More closed in	a
" " "	oy	3	" " joy	" " "	oy
" " "	u	4	" " urn	" " "	u
Lower Pharynx Fig. 8–6.					
More open in	u	5	" " rub	" " "	u
" " "	o	6	" " oh	" " "	o
" " "	u	7	" " rule	Most closed in	u

THE NATURE OF THE VOCAL FUNCTIONS.

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THE NATURE OF THE VOCAL FUNCTIONS.

PART I.

Pure Tone Production.

Section 1. Easy Singing Range. — Every singing voice has a range of vocal tones produced without much muscular effort. This range embraces about five tones of the scale — an interval of a fifth; in sopranos and tenors from about F to C (Ex. 1); in altos and basses from B♭ to F (Ex. 3, 4). This singing range is generally identical with the pitch of the speaking voice. In sopranos this part of the voice is usually weak; in male voices it is quite powerful. This weak part of the soprano compass requires more development than the more brilliant and clear upper tones.

All voice training should begin with the highest tone of this speaking range; in that the production of this higher tone requires a certain degree of muscular tension, and a favorable position of the pharynx, which is better suited to produce a singing quality of vocal tone than would be the case on the lower tone of this speaking range. The attention of the singer must be directed towards *the production of a good and pure quality of tone*, which is to establish a model vocal tone. This model tone once obtained, the singer should aim to reproduce this model tone in the lower and upper range of his vocal compass, thus establishing an even tone quality throughout the different registers of his voice.

2. Easy Tone Production. — Vocal tone is produced in the larynx. The easy emission of vocal tone is the result of a proper physical condition, aided by the action of muscles controlling the cavities of the vocal organ — the trachea, larynx, and pharynx — through which the well-regulated breath current passes on its course outward from the lungs as pure vocal tone. *The independence and flexibility of every muscle of the vocal organ are absolutely necessary for an easy emission of vocal tone.* Flexibility of the muscles does not mean looseness, or flabbiness of the muscles. On the contrary, the muscles must be firmly managed without rigidity. Well-controlled flexibility assures easy tone production. The varied and complicated functions of the different parts of the vocal organ cannot be artistically manipulated without absolute independence of every muscle of the vocal organ. The combined actions of the muscles controlling the cup, the vestibule, the epiglottis, and pharynx above, establish the proper form of the larynx cavities; which, if produced with ease, also assure an easy tone production.

3. The Vowel A. — Vocal tone is sustained on vowels. Vowels are obtained by various positions of the tongue, which establish more or less favorable forms of the pharynx cavity in tone production. Some vowels are more favorable to the emission of high tones, others to low tones. The Italian vowel A is recognized as giving the throat, or pharynx, the proper form for the emission of a pure vocal tone (see Singer's Alphabet). This vowel sound of the Italian A is not found in the English alphabet, but occurs in some words, as in *car*. In some alto or bass voices this A sound opens the throat too wide. It is necessary in such cases to use another vowel producing a more closed position of the pharynx for an easy tone production.

Note. As it is somewhat difficult for beginners to produce a pure vocal attack

on a vowel, it is advisable to begin the first exercises with vowels preceded by a consonant. The consonants best suited are *n*, *l*, *d*, in that they are sounded by the tip of the tongue, thus producing the least obstruction by the action of the tongue. Ex. 1 to 4.

4. **Pharynx Pose.** — The muscular independence and flexibility of the tongue (Fig. 8, 1) are necessary to establish a favorable form of the upper pharynx (Fig. 8, 11). The higher the tone, the more closed must be the upper pharynx cavity; and the lower the tone, the more expanded must be the lower pharynx space (Fig. 8, 6). This is called the proper *Pharynx Pose.* It is obtained by the action of the tongue, which every singer must be able to control, so as to establish the required pharynx pose suited to his individual case. No standard position or fixed form suitable for all voices is possible. Each vocal organ being different in proportions, it is obvious that each singer must seek to establish the form of the pharynx best suited to his own case. Without a correct form of the pharynx pose, no singer will ever obtain a good resonant vocal tone, an even quality of voice, nor an extended vocal range. Some singers have this by nature, others have to acquire it by patient practice, judgment and a good musical ear.

5. **Musical Ear.** — The possession of a cultivated musical ear having the capacity and experience to recognize the artistic qualities of a voice — as well as its shortcomings — is one of the most valued requirements, absolutely necessary to a singer and teacher. Without it no singer can expect to become a vocal artist, nor can a vocal teacher hope to obtain artistic results from his pupils. Personal experience of individual singers is valuable in teaching, if the pupil's vocal organ has the identical physical conditions as those of his teacher; otherwise no singer should insist on forcing his own mode of tone production and tone quality on his pupil. He or she will do more harm than good if he is without the knowledge to comprehend the nature of each voice, and has not a sensitive and cultivated musical ear to aid him in developing the best possible vocal tone of every voice placed in his charge.

6. **Closed Italian Vowels.** — The normal pharynx position produced by the Italian vowel A becomes more closed by the Italian vowel E (as in *beg*) and I (as in *grief*). Hence they are called closed vowels. In the vowel E the tongue in the middle is raised; and almost touches the roof of the mouth or hard palate (Fig. 8, 2), in sounding the vowel I. The vowel I (which is identical with the English *e* in *be*) closes the pharynx too much, which produces a "squeezed" quality of tone. This vowel tone can be improved by either lowering the sides of the tongue, or — more effectively — by forming a groove in the middle of the tongue, thereby establishing a more rounded form of the pharynx tube.

The three Italian vowels in Exercise 1, A, E, I, should be practiced in reversed order, as at a, b, c, for the twofold purpose of finding the vowel best suited for the proper pharynx pose, and to secure a uniformly even quality of tone on the three vowels in succession.

7. **Closed French Vowels.** — The three French vowels — I, U, EU (Ex. 2) — establish different degrees of closed vowels. The French and Italian I are identical with the English E in *be*. This is the most closed of all vowels, as was shown in Sect. 6. The French vowel *U* is a sound between the English *U* in *fur*, and E in *me*; and the French E*U* is a sound between *oy* in coy, and *ea* in yearn. These two vowel sounds represent, or establish a position of the pharynx which cannot be obtained

by any vowel sound in the English language; but which are especially adapted by their closed form for an easy emission of high tones of male voices, particularly basses. If the A sound is too open, and the I sound too closed, or squeezed, the three vowel tones preceded by the consonants *n*, *l*, *y*, should be practiced in reversed order, as at a, b, c, until the singer finds the proper position of the pharynx for the higher tones. This pharynx pose he must become accustomed to; otherwise the pharynx position will revert either to the more open A, or the more closed I form.

Note. If the teacher or pupil be uncertain as to the correct sound of the French *u* and *eu*, let him consult with a Frenchman.

8. **English Open Vowels.** — The Italian open vowels O and *U*, Ex. 3, are the same in sound as in the English O (in *go*) and U (in *rude*). These vowel positions open the throat or pharynx, at the bottom (Fig. 8, 6). These open vowels sound too hollow in some voices, particularly in the lower range of bass voices. By slightly changing the *U* position towards an O sound, this hollow quality disappears to some extent. The English language has an A sound, in the word *law*, which produces a better pharynx pose in most male voices than *U* or O. The English vowel syllables in Ex. 4, *nay*, *law*, *doo*, present three forms of the pharynx more or less open, which should be practiced in reversed order, as at a, b, c, until the best pharynx pose for the lower as well as the upper tones is found.

Note. Sopranos and tenors sometimes obtain a fuller tone quality on the vowel *U* than A or O. The possibility of each voice should therefore be tested by practicing the vowel syllables in each of the Exs. 1, 2, 3, 4.

9. **Ready Pose.** — Before a vocal tone is produced, the singer must be ready, or prepared, to emit the tone properly. This requires a combination of *muscular* and *mental action.*

A. The muscular action requires the coöperation of the muscles of the diaphragm, the chest, the trachea, larynx and pharynx. These act in conjunction before the tone is produced, by supplying the lungs with air, and properly preparing the breath current necessary for the emission of the vocal tone, by a proper control of the muscles.

B. The mental action is the result of muscular memory. It consists in inducing the muscles to prepare the proper form of the vocal tubes, and in calculating the nature of the breath current necessary for the production of the tone required. This act, while it seems instinctive, is nevertheless the result of experience and judgment. Mental influence is therefore of the greatest importance in singing.

This act of preparation of the vocal organ is called the *Ready Pose.* It must be steadily and firmly maintained while singing, even during short breath pauses; nor should the muscular control be relaxed in the least, neither in a subdued piano delivery, nor in a forte passage.

10. **Breath Control.** — Without correct breath management no artistic singing is possible, as vocal tone is sounding air, due to a properly manipulated air current. Breath control, which comprehends *inhalation*, *retention* and *expulsion* of the breath, can be gained only by individual experience and practice.

A. *Inhalation* consists in supplying the lungs with as much breath as the expansion of the chest will allow. Inhalation should be carried on through the nasal passage, rarely through the mouth. Inhaling should be practiced aside from singing, so as to increase the singer's capacity to expand the lungs.

B. *Retention* of the breath is rarely mentioned by vocal teachers, and yet it is of the greatest importance in singing to be able to retain for a long time the breath in the lungs. Breath retaining should therefore be practiced aside from singing, for the purpose of strengthening the retaining muscles of the chest, and enabling the singer to control his breath with ease.

C. *Expelling* of the breath during singing constitutes one of the most important factors in vocal culture. It requires much practice, particularly of the diaphragm muscles, good judgment and artistic instincts. Too much breath pressure can mar a tone as effectively as too little. The resonance of a tone is primarily the result of proper breath pressure; as is also an effective piano and the *messa di voce*, or swell tone.

Note. What effect the air current has on tone production I have observed in my experiments. I was able to produce on *one* tube three inches long the thirteen chromatic tones of a scale simply by means of thirteen different degrees of air currents.

PART II.

Tone Attack.

11. Tone Attack. — A clear distinction must be made — in producing vocal tone — between the attack, or starting of a tone, and the continuation, or emission of a tone. The tone is either started in the larynx, as pure larynx tone, or the attack is aided by the action of the tongue or lips in the upper cavity of the vocal organ. The different vowels permit a pure vocal attack in the larynx; the consonants do not. It is therefore of the greatest importance in voice culture to have a clear conception of the various modes of tone attack, so as to be able to practically apply the same.

12. Vowel Attack. — Vowel sounds do not hinder a pure vocal attack; they merely deflect the tone generated in the larynx, by forming changes in the cavity of the pharynx.

Vowel sounds can be produced and sustained in a whisper, but not without sounding definite pitch.

Vowel tones — when sounded separately, with a pause between each — cannot be produced without an accompanying action of the glottis, a slight noise, called *click of the glottis*. This mode of attack of the vowels is difficult for some pupils to acquire. It is explained in Sect. 20.

13. Consonant Attack. — Consonant sounds are caused by the action of the tongue and lips in the upper cavity of the pharynx. They hinder therefore the pure vocal attack of the vowels in the larynx. But this fact makes the consonants more suited for an easy vocal attack with some beginners, than the pure vowels.

Consonant sounds can be formed without their connection with vowels, but they cannot be sustained without them — except the letters F, R, S, Z. Consonants can be produced without a definite pitch.

Consonant tones cannot be sung without an accompanying vowel (see 21). But the vowels only are sustained in singing the text, not the consonants. The latter are therefore to be considered only in the attack of a tone, or its ending. In either case the voice should never linger on a consonant in pure vocalization.

14. Aspirate, H. — The difficulty encountered by some singers in attacking a pure vowel tone by the click of the glottis (20) is removed by preceding each vowel by the aspirate or breathed consonant H. This letter can be formed only by keeping the vocal lips open. Thus the vowels in Exercise 21 are softly started by preceding each with the aspirate H, exhaling as little breath as possible.

At *a*, Exercise 21, the five vowels should be sung in one breath, each vowel detached from the following by a slight pause, steadily holding the breath, and firmly maintaining the pharynx pose required for the five vowel tones. Each vowel position must be assumed with precision, and its characteristic quality clearly brought out, that is, distinctly articulated.

At *b*, Exercise 21, the five vowels are sung in one breath without a pause between them, but the points mentioned in the preceding must be observed. The position of the tongue required for each vowel must be assumed quickly, and the articulation of each clearly delivered, otherwise the different sounds of the vowels will produce an uncertain, lazy, drawling effect. It is

advisable in this connected delivery of the five vowels to give a slight breath emphasis to the H of each vowel, but not sufficient to break the even, sustained nature of the group of vowels. Practice both examples *a*, *b*, softly-*p*, as well as with a full power-*f*.

15. **Gutturals, G, K.** — These guttural consonant sounds (Ex. 22) are formed at the back of the throat, by raising or pressing the middle of the tongue (Fig. 8, 1) against the bony back of the throat wall (Fig. 8, 12). The tongue touching the back wall closes the pharynx tube, and these guttural sounds are produced by the air current from the lungs forcing its way out, resulting in the guttural or throat sounds G, K. If the tongue is not properly placed, the sound of these consonants — in a tone attack — may produce a very unpleasant hollow tone quality. A good musical ear must pass judgment as to tone quality. In attacking a tone with these consonants the G is softer than the K. This must be carefully observed in Exercise 22, at *a*, *b*. The two modes of delivery (Ex. 21, *a*, *b*), detached and connected, must also be practiced in this case.

16. **Dentals, D, T, N, L.** — These consonant sounds (Ex. 23), are created by the action of the tip of the tongue. In the production of D and T the tip of the tongue, touching the upper row of teeth, is drawn down slightly when the sound is emitted. The sound of L and N can be continued or sustained, in that the tongue being pressed against the upper row of teeth retains its position, while the sound is produced. N, however, entirely closes the vocal passage; the sound is consequently obliged to pass out through the nose (Fig. 8, 5); this gives the N its nasal character. In sounding the L the sides of the tongue are slightly dropped, so that the sound can pass out through the mouth.

Exercise 23 should be practiced to obtain a correct vocal attack with these four consonants, at *a*, *b*, *c*, *d*. D requires a soft and T a sharp attack. N and L must be carefully studied in tone attack, and much more so at the end of a tone (Ex. 29). Since their sound can be sustained, they are apt to interfere with the pure quality of the vowel tone.

17. **Labials, B, P, M.** — The lip sounds B and P (Ex. 24) are made by a puffing opening of the closed lips. The B requires a gentle puffing, and the P a harsh, explosive puffing action. M is produced with the lips closed, the sound passing through the nose — like that of N. The sound emitted by M is known as ***humming***, and can be sustained. This fact makes it undesirable in vocal attack, in that singers are inclined to start a tune with the humming sound, which is a fault to be avoided. These characteristics must be carefully observed in the vocal attack with these consonants.

18. **Sibilants, S, Z.** — These consonants are hissing sounds, and hence require careful consideration in their use in tone attack (Ex. 25). Since these sounds can be continued, this hissing effect must be avoided, both in tone attack and tone ending. S is more objectionable than Z. This distinction must be emphasized in the exercise, at *a*, *b*.

19. **Liquid, Y.** — The consonant *y* (Ex. 25) is produced differently in the alphabet than it is in its combination with vowels. In the alphabet it is made by the lips, and in conjunction with vowels by the tip of the tongue, somewhat similar to the position for S and Z. It partakes of the nature of a liquid or melting consonant in that in its pronunciation the sound melts or flows into the following vowel, so that no distinct articulation of the *y* as consonant sound and the following vowel is possible. This liquid or melting character of the *y* sound

is apt to creep in after the sound of the Italian I (English E) when this is followed by another Italian vowel; as in I (*y*) O, I (*y*) U, I (*y*) A, I (*y*) E. This error in articulation is due to a too limber action of the tongue point in changing the position of the tongue in the emission of the different vowels. To avoid this the tip of the tongue must be firmly maintained, while the tongue, as a whole, makes the change of position.

20. Glottis Attack. — As has been referred to in Sect. 12, the vocal attack by means of the stroke, or click of the glottis, is somewhat difficult for some singers. The click is a slight noise produced in the larynx by the air current from the lungs forcing its way out between the closed lips of the glottis (Fig. 6, *u*), the sudden opening or parting of the lips causing the click. It is similar in effect to the puffing sound made by the lips in articulating the letter B, and more sharply the P. It can be produced just as softly as the letter B, but also as explosive as the letter P. Its mode of production is best demonstrated by observing the slight coughing action taking place in the larynx in the act of whistling a number of detached tones; continue the coughing or puffing action without the whistling, and the click of the glottis can be clearly heard by opening the mouth.

Before the three examples in Exercise 26 are practiced, it will be best to produce the click of the glottis softly in a whisper, without pitch; and not before the click can be distinctly produced should it be sung on A, as at *a*, then on the closed vowels, A, E, I, at *b*, and finally on the five vowels, as at *c*. Particular attention must be given to the closing of the glottis after each click, so that each attack is clear and decided. Take special pains to avoid the use of the H, as this would make the click impossible (see 14).

21. Articulation of Alphabet. — In singing words each consonant embraces two sounds, vowels but one. Each consonant has its own sound produced by the action of the tongue or lips, which can be produced with short puffs of breath (see Sects. 14 to 18). But when a consonant is to be prolonged or sustained, it can be done only with the assistance of a vowel, which is sounded after it, as in *be, de, kay, qu;* or before it, as in *ef, ar.* These two sounds in consonants must be properly produced by the action of the tongue or lips, so that the associated vowel sound can be emitted clearly and distinctly.

This clear, distinct, and audible production of the letters of the alphabet is called *articulation.* In Exercise 27 the whole alphabet is to be musically delivered in a chanting manner on one tone. In order to effect as distinct an articulation as possible, each two adjoining letters are to be repeated, as at *a.* The star (*) indicates the letters apt to present difficulties in articulation. Between *b a, d e, e f, g f, t u,* the liquid sound of *y* is apt to be heard (see Sect. 19); this must be avoided. Between *h g* the ending of *h* (aitch) and the beginning of *g* (dschee) produces a mushy sound of consonants; the ending sounds of *h* and the beginning sounds of *g* should be formed into one sound as much as possible, and yet bring out the articulation of both. It is a somewhat similar case between *h i;* the vowel I must be distinctly attacked with the glottis. The letters *l, m,* should sound like *el, em,* not *el, lem;* and *m, n,* like *em, en,* not *em, men;* so with *n, o, p, o,* not *p, yo; q, r,* not *qu, war; r, s,* not *ar, res; t, s,* not *te, yes; t, u,* not *te, yu; x, y,* not *ex, swy.* Give the *w* but one sound, *wa,* not three syllables — doubleyu.

After being able to pronounce the different letters distinctly in groups of two on

one tone, sing the letters in succession as at *b*. Sing as many as possible in one breath, and increase the number until the singer is able to chant the whole alphabet in one breath; and to obtain the greatest breath supply, continue this exercise in a slower delivery, until the singer is able to chant the alphabet slow enough to last 18 or 20 seconds, or even half a minute. Sing this exercise not softly, but with a full voice and ringing quality. Begin the chanting in the easy singing range, and continue same in the upper and lower extension throughout the compass of each voice (see Singer's Alphabet, page 14).

22. Tone Ending. — The manner of ending a vocal tone is as important as the attack. Many singers commit grave errors in their ending of a tone. There are two ways of stopping the emission of a vocal tone — either by stopping the breath pressure from the lungs, or by closing the glottis. Stopping the tone by closing the mouth, or closing the pharynx tube by the action of the tongue, is absolutely wrong.

A. If a tone is ended by a vowel the emission must be stopped by closing the glottis, and the breath is held back at the same time. If the interruption of the tone is short, merely to catch breath, the larynx pose as well as the pharynx pose must not be relaxed, but firmly maintained, so that it constitutes the ready pose for the following attack (Ex. 28, *a*, *b*).

B. If a tone is ended by a consonant the emission of the tone is stopped by the action of the tongue or lips. This action must be very exact, distinct, and decisive, produced at the very end. The consonant must not be prolonged or dwelled on, as the pure vowel tone would suffer. The consonants L, N, R, S, especially require attention (Ex. 29).

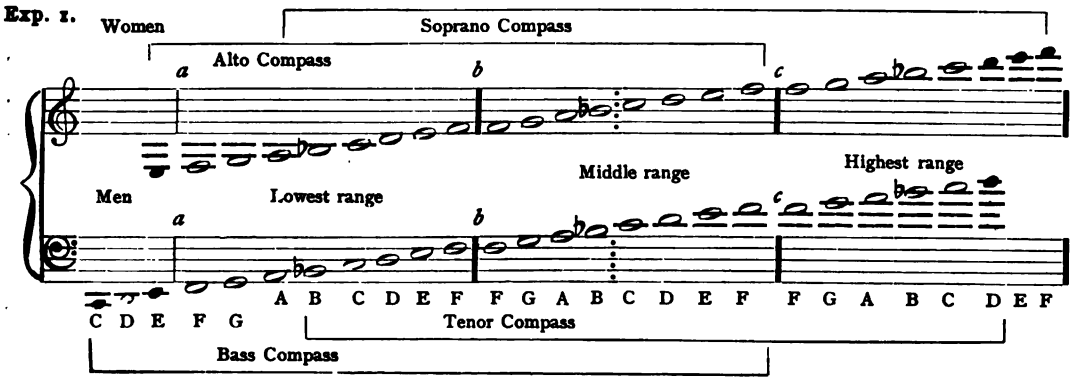
PART III.

Registers.

23. Introductory. — Among singers and vocal teachers the greatest uncertainty and confusion exist as to what constitutes the registers in the human voice. Neither the singing teachers nor the medical profession have demonstrated any reliable knowledge on this point. The most absurd theories have been propounded. Some deny the existence of any registers; others claim two, three, four, even five registers. Garcia classes the falsetto register as identical with the medium, an error followed by Stockhausen, Sieber, Merkel and others. The foundation of all this uncertainty is due to the hasty claim of a medical investigator, that tone production is due — as well as every other phase of the vocal mystery — *to the vibration of the vocal cords.* How superficial this claim is may be observed from the fact that no influence whatever is attached to the action of the false vocal cords, or pocket bands, which, by their action, produce a wonderful variety of space forms — in width, height and size — of the cup cavity (Fig. 2, 3, 4, *c*). That this action takes place during singing is corroborated by the foremost medical experts (see 29, *Note*). And yet no account is taken of this muscular action by vocal teachers to establish a logical explanation of the physical functions active in the tone-producing mystery. As long as this is the case, vocal teaching is a matter of chance, or experience, but not knowledge. By years of instruction and practice a singer acquires an experience in handling his own voice which he ought to have obtained in one half or one quarter the time, had he, or his teacher, been in possession of knowledge. My own personal investigations in this direction are here presented for the benefit of those who are earnest seekers after the truth.

24. Vocal Compass. — The complete practical vocal compass of men and women combined embraces four octaves and three tones; all together about thirty-two successive tones of a scale. This tone compass of the human voice produced by men and women is divided as follows:

VOCAL COMPASS OF THE HUMAN VOICE



Each class contains twenty-three tones of the scale, which are divided into three sections presenting the lowest (*a*), middle (*b*), and highest tones (*c*) of each class; the male class being an octave lower than the female class.

Some singers are capable by nature, or cultivation, of singing a very extended range of tones; but no male or female voice can produce the whole compass of its class. This fact is due to the physical limitations of the vocal organ as a tone-producing mechanism. The lowest tones of the male voice, for instance, require a very expansive trachea and large larynx cup (Fig. 2, *c*); while the highest tones of the female voice demand a very contracted trachea and small larynx cup (Fig. 4, *c*). These two conditions are not found in one normal individual, but may, to a certain extent, be produced *if the physical conditions of a singer's vocal organ are favorable.* This information cannot be obtained with the aid of a laryngoscope, but can only be discovered by personal efforts of the singer, guided by the knowledge of the vocal teacher.

25. Registers. — The easy singing range of every singer's voice is located in the *middle of his own vocal compass*, and embraces about an octave. His speaking voice is produced in the lower tones of this easy singing range (Ex. 1 to 4). The vocal function is the same for singing and speaking, with this difference, that in singing the tone produced must be sustained, steady, and of a fixed pitch, obtained by a fixed and firm position of the larynx, giving the cup cavity a certain form which must be steadily maintained as long as the tone lasts. In speaking there is no fixed position of the larynx cavity; on the contrary, the muscles are loose, which is the cause of the speaking voice sliding up and down, producing this uncertainty of pitch. However, the vocal tone produced in both cases is a natural *normal tone*, produced in a natural position of the larynx. But *every vocal tone produced above or below this normal position requires a change in the form of the larynx cavity* — a different function of the vocal organ, which is indicated by the term "*registers.*" In certain sections of a singer's vocal compass the same tones may be produced in different forms of the larynx cavity, which change affects the quality and volume of the vocal tones. To improve the nature of these vocal tones requires a good musical ear on the part of the singer and teacher. It is the teacher's duty to develop the musical possibilities of these changes, which must be understood to obtain the best result in as short a time as the physical condition of the singer will allow.

Note. I found in my experiments with artificial tubes that in two cups having the same form of the opening of the glottis (Fig. 3, *b*, *b*) and opening to the larynx tube (*d*, *d*), same height of cup (*c*), a fuller tone quality was produced by a wider cup and vestibule (*f*) than with a narrower form of the same. A difference of but $\frac{1}{4}$ of an inch in width produced not only this difference in volume, but also a difference in pitch of from five tones to an octave. I also established the fact that by lowering the edges of the pocket bands (*d*, *d*), thus reducing the height of the cup space, the tone was raised in pitch until a whistling falsetto quality was obtained. Whereas by the raising of the edges of the pocket bands, thus enlarging the height of the cup space, the pitch was lowered in proportion. This change of pitch was due entirely to the action — upward and downward — of the pocket bands; the form of the vestibule (*f*) and breath current remaining the same. But the change of the cup in width, with a corresponding change of width in the

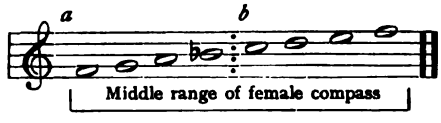
vestibule, produced a change in volume and tone quality.

26. Medium Register. — The male and female voice which is capable of producing — in its own easy singing range — the greatest number of middle tones of the male and female class (Sect. 25), also establishes the vocal function which characterizes the *medium register*. In the female class, sopranos, and in the male class, tenors, produce the exact middle range of their class in their own easy singing compass; hence they establish the action of the vocal function and quality of tone characteristic of the medium register (Fig. 3).

MEDIUM REGISTER

Soprano, Alto and Tenor (an octave lower).

Exp. 2.



The larynx of sopranos and tenors — in producing these tones in the medium register — is in a normal condition, assumed for a natural vocal delivery. We must take into consideration the quality of the tone produced in the medium register of men and women, as well as the position of the larynx originating them. These two points are important in establishing the essential features of the medium register.

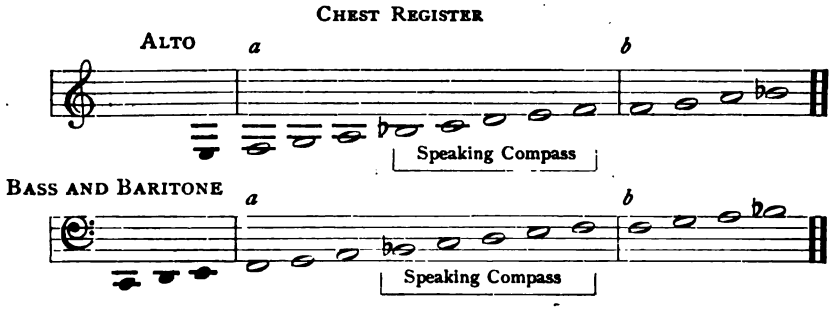
A. Contraltos, for instance, whose speaking range is a fifth lower than that of sopranos (Ex. 3), if they desire to sing the four lower tones of the middle range (Exp. 2, *a*) in the medium register, are obliged to change the position of the larynx form from the more extended chest position (Fig. 2) to the more closed form of the larynx employed by sopranos (Fig. 3). This change of the larynx position also changes the quality of the alto voice, and inclines it towards the soprano type. This is clearly noticeable if the same four tones are sung by altos in their own speaking range — in the chest register — which some robust altos are capable of obtaining. For altos the medium register would consequently not be a normal position of the larynx, but an assumed form, obtained by a trained muscular action, approaching the natural form found in sopranos. In this position of the larynx altos can deliver the whole compass of the medium register presented above, at *a*, *b*.

B. The same conditions are found in baritones. The above easy singing range of tenors (an octave lower) in medium register can be produced by baritones by a change of the larynx position, resembling the more closed form assumed by tenors. But this more closed form of the larynx is not as practical and effective with baritones as it is with altos. In baritones this change should not be made for the four lower tones in Exp. 2, *a*, but may be made for the four upper tones (at *b*). I have met with cases where teachers — ignorant of the physical causes, and deficient in ear training — have developed baritone voices entirely in this male medium register, which partakes of the quality of head tones, being absolutely without resonance and power. Such training has no artistic value, as the voices are more effeminate than masculine (see Sect. 32, 33, *C*).

27. Chest Register. — As the medium register is the natural or normal tone-producing section of the soprano and tenor voice, so the chest register is the natural or normal section in which altos, baritones and basses produce the vocal tones in the lowest section of the male and female voice

(Fig. 2). The tones produced in the chest register are as follows:

Exp. 3.



A. These low tones are distinguished from those produced in the medium register by a fuller and richer quality, being the result of a larger and more expansive proportion of the cup (Fig. 2, *c*) in the vocal organ of altos and basses. This chest quality — characteristic of robust altos and basses — cannot be produced by the more closed larynx form of sopranos and tenors (Fig. 3). No matter how great an expansion of the larynx cup sopranos and tenors may be capable of, their tones in the chest range *have not the same full quality of altos and basses.* The physical limitation of sopranos and tenors in expanding the cup space is therefore responsible for the quality and number of tones these voices are able to obtain in the chest range. This capacity can be demonstrated only by the physical efforts of the singers themselves. No teacher can prophesy them, but he can guide the singer in his effort, if he has the knowledge required.

B. Altos possessed of strong physical powers are able to produce in the chest register the whole chest range presented in Exp. 3. But the higher section (at *b*) can be obtained only with a degree of muscular effort few altos are capable of exercising. Hence these upper tones of the chest register can hardly be produced softly— in piano phrases; which induces altos to change the mode of producing these tones from chest (Fig. 2, *c*) to medium register (Fig. 3, *c*). This brings about not only a change in tone quality, but also a change in the proportions of the larynx cup — which, in assuming the smaller more closed form found in the medium of sopranos, relieves altos from the muscular effort needed to produce these tones in the chest register. This change of register from chest to medium produces in some altos a peculiar noise — a click — caused by the sudden movement of the pocket bands, which some singers are unable to correct. It can be improved, however, by careful exercise of the pocket bands (see 26, A).

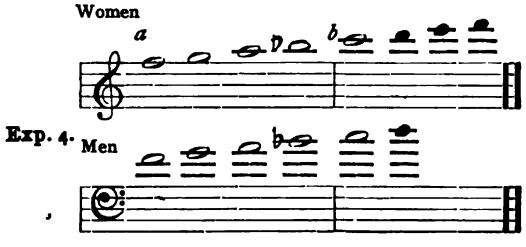
C. Baritones have no such difficulty, and can easily sing their whole lower range in the chest register. In piano phrases it may be necessary — as with altos — to sing the upper section (at *b*) in the medium register. However, these tones should not be sung in a weak, powerless head tone quality, but should be improved in volume by expanding the cup space, without changing the medium position of the pocket bands (Fig. 3, *c*). Here again the ear decides as to the character of the tone quality (see Sect. 26, B).

28. Head Register. The medium register is produced in a normal position of the larynx space of sopranos and tenors (Fig.

3), the chest register is produced in a normal position of the larynx space of altos and basses (Fig. 2). But the head register can be produced — in all voices — only by an artificial, abnormal position of the larynx space, in that the edges of the pocket bands drop down towards the vocal cords, thereby reducing the height of the cup space (Fig. 4, *c*). By this reduction of the cup space in height, the pitch of the vocal tone is raised (as was explained in Sect. 25, *Note*). This dropping or relaxation of the pocket bands produces a relief of the muscular tension in the larynx, which is very noticeable by singers in producing head tones. If this space is reduced too much, however, the tone becomes thin, small, and wanting in power. In fact, it produces the falsetto quality. The range of tones obtained in the head and falsetto register is therefore the same for both; namely:

HEAD AND FALSETTO REGISTER.

Exp. 4.



Note. It depends on the favorable physical conditions of the pockets and pocket bands — their size, flexibility, and muscular power — whether a vocalist can produce the highest vocal tones in the head or falsetto register. In most individuals the height of the pockets is about two fifths of an inch (Fig. 6, *c*), but in some it is fully three quarters of an inch. The opening to these pockets will hardly admit the tip of the little finger (Fig. 8, *c*); in others the forefinger can be pushed up into the pockets. It is logical, therefore, that the pocket bands, or flexible edges, of these protruding lips (Fig. 6, *d*) can perform a greater variety of functions in one individual than in another.

A. Some basses, for instance, are able to obtain the whole head tone range of tenors in the falsetto register. They are able to drop the pocket bands sufficiently to produce the falsetto tones, but are not capable of reducing the width of the cup space (Fig. 4, *c*), owing to their naturally wide pockets. Hence such basses produce falsetto tones in this highest range approaching the quality of the alto voice. In England such basses are employed to sing the alto parts in boy choirs.

B. In some baritones the case is different. Their pockets not being as large as those of basses, they can produce this head range in a full and robust tenor quality. The most noted example of a baritone cultivating these upper tones as a tenor is Jean de Reszke, whose teacher trained him as a baritone, not knowing that he possessed the natural capacity for acquiring the robust tenor quality in his falsetto range. Not until late in his professional career did Jean de Reszke discover the possibilities of his own voice, which ought to have been developed in the first stage of his vocal training.

C. It is somewhat similar with altos. Some can never obtain a good full head tone quality. Others — like some baritones — have the capacity to cultivate their falsetto range in a full soprano quality.

D. Sopranos and tenors can greatly improve their highest range in fullness and power, if the capacity of their larynx is physically favorable for this training. It is the duty of the vocal teacher to be able to probe this matter, not by years of experimenting, but by a few weeks of practical exercises.

29. Falsetto Register. — The similarity of the vocal functions producing the head and falsetto registers has been mentioned in the preceding section. In Sect. 25, *Note*, I stated that by the dropping of the pocket bands the height of the cup space was reduced, and the pitch of the tone correspondingly raised, until a falsetto quality was obtained. The lips of the false vocal cords, or pocket bands, are in the falsetto position directly over the lips of the glottis, so that there is hardly a quarter of an inch of space between the openings (Fig. 4, *d*,*d*, and *b*). The quality of the tone produced in this falsetto position is affected by the nature of the cup space on each side (Fig. 4, *c*, *c*). The set of muscles controlling the walls of the cup on each side (Fig. 6, *h*, *h*) are responsible for a singer's ability to expand or contract the width of the cup. In lowering the pocket bands (Fig. 6, *d*, *d*), for the falsetto position the width of the cup is more or less changed. If, under these circumstances, a singer has the muscular capacity to expand the cup space, the falsetto tone can be improved in quality and volume; otherwise a thin and flutelike falsetto will be the result.

If the control of the pocket bands is lost entirely by the complete relaxation of the muscles in the falsetto tones, it will be impossible for the singer to expand the cup space; it is therefore necessary to retain a certain muscular control, which is noticeable by the better quality of tone produced, as also by the power to increase the tone.

By the expansion of the cup space with a fixed position of the pocket bands, sopranos and altos obtain a full head register, and tenors and baritones an equally large head tone quality. Basses cannot, however, produce the tenor head tone timbre — which approaches more the soprano quality — but can only improve their falsetto tones to approach the alto timbre of women and boys. This is due to the fact that basses cannot reduce their naturally large and wide cup sufficiently to establish the necessary proportions of the cup produced by tenors. Hence the bass falsetto has more the tone quality of altos than tenors (see 28, A).

In this connection it is àpropos to speak of a very important point in connection with the child voice. Garcia asserts — without giving his reasons for this fact — that the falsetto in men is a remnant of the child voice. If Garcia had comprehended the nature of the functions of the false vocal cords, he could have given the reason and source of this reproduction of the child voice by means of the falsetto. *For in the falsetto position every singer assumes the identical position of the larynx cup, or space, which was extant in the vocal organ of the child before the period of mutation.* This question will be more fully presented in Sect. 34.

Note. I will here present some facts, collected by some of the foremost medical investigators of France and England, as to the action of the pocket bands in the production of falsetto tones.

Dr. Mandle asserts that in the production of the falsetto tones the pocket bands are drawn down so as to press on the upper surface of the vocal cords (Fig. 4, *d*, *d*, *b*).

Drs. Gougenheim and Lemoyes observed that in the production of the falsetto tones by a bass singer the pocket bands were drawn down over the vocal cords.

Dr. Gordon Holmes states that in falsetto tones the rim of the vestibule (Fig. 7, *o*, *p*, *q*) suffers a progressive and marked constriction, and that the falsetto tones can be produced even if the soft palate (Fig. 8, 3, 4) be destroyed by disease.

Dr. Martels holds that in falsetto *it is not the vocal cords* (Fig. 6, *b*, *b*), but the air

itself which is the sounding body. In falsetto tones the pocket bands (Fig. 6, *d*, *d*) contract and approach towards the middle line. The higher the tone, the closer together are the pocket bands.

Dr. Mackenzie states that in the falsetto voice of man and the head voice of women the vocal lips are almost closed (Fig. 6, *u*), and that the falsetto can be produced *without any accompanying elevation of the larynx.*

The evidence here quoted from the works of these medical experts merely corroborates my presentation of the functions of the pocket bands while in the act of producing tone, without explaining the origin of the falsetto voice. Their investigation, which was carried on with the aid of the laryngoscope, was confined to the observation of the inner larynx tube, leaving out of account the changes occurring in the cup cavity (Fig. 4, *c*, *c*) — its width, height, and size — resulting from the action of the pocket bands. Certainly no one in possession of the elements of physical law will deny the effect produced by these various changes of the cup space in the larynx proper on tone production, and yet no notice has been taken of their influence and importance by vocal teachers.

30. **Sopranos.** — The vocal compass obtained by the various types of soprano voices is quite large; it embraces almost the whole female range.

The utmost extension of every singer's voice depends upon the perfect development of the vocal resources. Artistic results can be obtained only by judicious exercises. The chief object in vocal training must be to cultivate the musical possibilities of every voice, by developing the capacity of the vocal organ to enable the singer to produce every tone in his vocal compass in an even tone quality, and an even tone volume. This is a difficult task with some vocalists, which can be realized only by continuous effort and much patience.

Sopranos are distinguished by their vocal quality and range. They are divided into *dramatic sopranos*, *mezzo sopranos*, and *florid sopranos*.

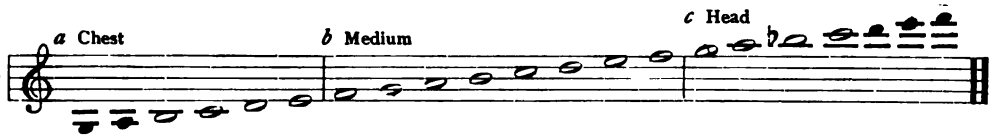
A. **Dramatic Sopranos** require the utmost possible training, to fit them for an operatic career. Every section of their vocal compass must be artistically cultivated to enable them to render every phase of an operatic composition. The vocal compass of a dramatic soprano is therefore necessarily very extensive, embracing almost the complete soprano compass. It is as presented in Exp. 6.

The voice must be well trained to produce the tones in each register, as presented in Exp. 5, *a*, *b*, *c*. The tones in the medium register at *b* require the most attention, as this range of the voice is exercised most in dramatic compositions — particularly in recitative delivery.

B. In each register are tones which demand more care in training than others. The lower tones in each register are frequently weak, and lack sonority. This shortcoming must be corrected by the proper exercises. The upper tones of each register require more muscular energy

COMPASS OF SOPRANOS

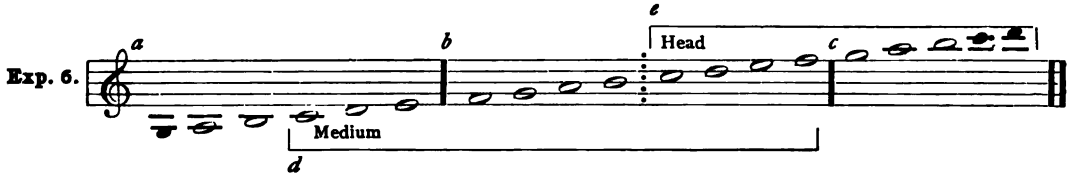
Exp. 5.



than the lower, and can therefore be best delivered with the necessary degree of muscular tension. To control these upper tones in each register for an easy delivery requires much exercise of the muscles regulating the cup cavity (Exs. 36, 37).

and head registers. So that these tones demand a careful training — the upper chest tones in chest (at *a*) for forte phrases, and in medium (at *d*) for piano phrases; the upper medium tones in medium (at *b*) for forte phrases, and in head (at *e*) for

DRAMATIC SOPRANO COMPASS



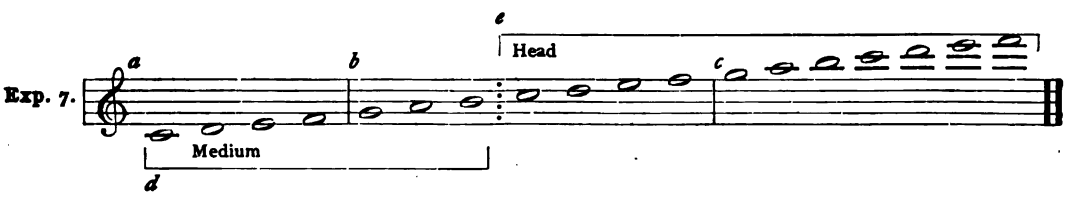
C. A number of the upper tones of the chest (at *a*) and medium register (at *b*) can be produced with the vocal mechanism of the register above. That is, the three upper tones in the chest range (Exp. 6, *a*) can be produced in the medium register (Exp. 6, *d*), and the four upper tones on the medium range (*b*) can be obtained in the head register (*e*). The head and medium registers are thus extended downwards, and may be continued downwards for a greater number of tones than is indicated above. It is advisable, however, to limit this double production of tones to the few upper tones of each register indicated at *d* and *e;* as the quality of these overlapping tones partakes of the more or less weaker and duller nature of the lower tones in the higher register. The training of these overlapping tones in their double production is very important, as the upper tones in the chest and medium registers can be artistically delivered — *in soft piano phrases* — only in the medium piano phrases. It is essential in training the voice to practice these tones both ways, that the quality of the tones be equalized, so as not to permit an unevenness in the vocal timbre nor tone volume (Exs. 47 to 50).

D. **Mezzo Sopranos** are so called in that their vocal range is shorter by a few tones; either above or below, or both. In every other respect mezzo sopranos are subject to the same training as dramatic sopranos.

E. **Florid Sopranos** are chiefly distinguished for their light and flexible quality of voice; producing their best tones in the highest range of the female compass (See Exp. 7).

F. Such sopranos have naturally a very limited cup space, and very small pockets. Hence they obtain their best tones in the head register, which is brought down into the medium range, sometimes as far down as G (Exp. 7, *b*). The small pockets hinder the production of the chest tones

FLORID SOPRANO



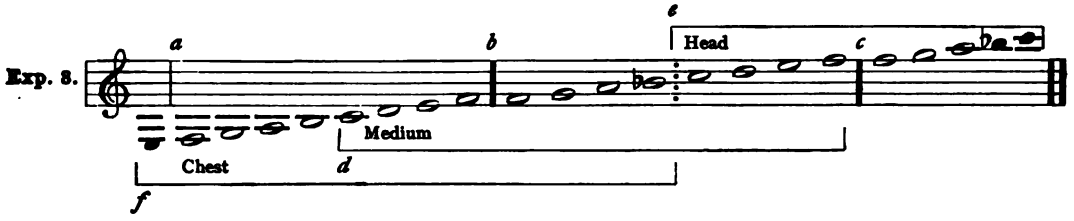
(at *a*); the lowest tones are therefore usually weak, as they are produced in the medium register (at *d*).

The extraordinary muscular flexibility of such sopranos enables them to achieve the utmost agility in vocal culture. The florid style of music is their natural sphere. Hence the training of such voices ought to be followed up in this direction, and not on dramatic lines.

Note. The natural capacity of a singer's vocal organ, as well as his physical and mental makeup, must be taken into consideration by a vocal teacher before he decides in which direction the vocalist would be apt to succeed. No teacher can hope for artistic results where the pupil's ambition is out of proportion to his natural ability. Nor can a pupil hope to succeed where the teacher is unable to gauge within a limited period — say six months — in which direction a pupil's talent lies.

31. **Altos.** — Altos produce not only the lowest tones of the female range, but their tone quality is also distinguished from that of sopranos by being fuller and more mellow. There are two classes — *altos* simple, and *contraltos;* the combined compass of which is:

COMPASS OF ALTOS



A. It will be seen from this example that the vocal compass of altos runs down considerably into the range of tones produced by the male voice. Some robust altos produce a tone quality in this lower range hardly to be distinguished from that of baritones. Such altos have great difficulties in acquiring a good alto tone quality, and in equalizing their vocal range. These difficulties are increased on account of the natural exceptional conditions of the larynx which enable them to realize the three positions, or forms of the larynx cup, necessary for the production of chest, medium, and head (or falsetto) register. The alto voice is further inconvenienced by the fact that the registers may easily be extended, overlapping one another (Exp. 8, *e*, *d*, *f*). Altos are therefore in greater danger of being mistreated by vocal teachers than sopranos, since there is little unanimity of opinion on the treatment of such voices among them.

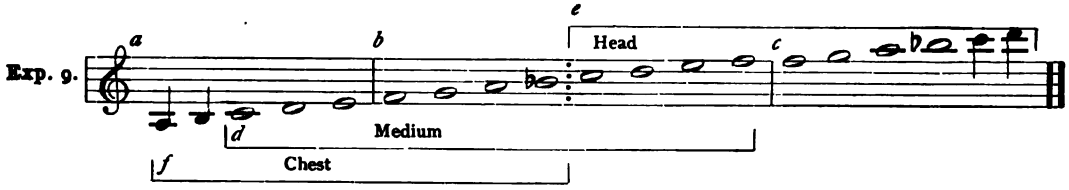
B. The chief aim in the cultivation of an alto voice must be the production of a good alto quality, and the equalizing of the vocal compass, so as to obliterate any indication of the peculiarity of the different registers. *The improvement of the medium register is a safeguard against a too exaggerated development of the chest register.* The tone quality of a well-developed medium ought to constitute the *model alto tone,* and the chest and head registers should be cultivated to harmonize with this. The upper tones in medium (at *b*) should be cultivated in both — medium and head (at *e*); and the upper tones in chest (at *a*) should be practiced in chest and medium (at *d*). This double production has been explained in Sect. 30, B, C (Exercises 47 to 50).

C. The chest register is produced by a large, expansive cup space (Fig. 2, *c*), and

the head register by a smaller, contracted cup space (Fig. 4, *c*). It is possible to cultivate a certain type of robust altos so that the whole alto range may be obtained in these two registers (*f*, *e*). I have met with a case of this kind, where the vocal teacher had ignored the medium register entirely. The chest register was run up to include the lower four tones of the medium range (at *b*), and the tones above this chest range were produced on the head register (at *e*). The tones in chest resembled the baritone voice, and the girl was recognized as a female baritone. The head tones were thin and without resonance, establishing a disproportion in quality and tone volume. If the medium tones in altos are (at *c*) in altos has at first the small and thin falsetto quality. If the singer possesses the physical capacity to manipulate the proportions of the cup space (Fig. 4, *c*) while the pocket bands are drawn down (Sect. 29), the falsetto tones may be improved to approach the fuller head tone quality (28, *Note*). This uncertainty can be established only by properly probing the possibilities; that is, by the necessary exercises testing the singer's capacity for producing a proper form of the cup.

32. **Tenors.** — Tenor voices are distinguished by their quality and tone range as *lyric tenors* and *dramatic tenors*, the combined vocal range of which is as follows:

VOCAL COMPASS OF TENORS (an octave lower)



strong and full, the four lower tones in medium range (at *b*) may be cultivated in the chest register (Exp. 8, *f*), but not otherwise (see 27, B). In ordinary altos — having usually a smaller compass and lesser volume than contraltos — the chest tones should not be carried above the normal chest range (at *a*).

D. As was stated in 28, C, some altos have the physical capacity to enable them to develop the tones above the medium register, at *c*, in a full head tone quality; others will never produce these tones in any other quality than falsetto (Sect. 29). Mme. Schumann-Heink is an excellent example of a robust alto cultivating her upper register in a full and resonant head tone quality. This upper range of tones

A. Tenors produce the highest tones in the male vocal compass, as sopranos emit the highest tones in the female compass. They have also a similar vocal range — an octave lower than sopranos. In fact, tenors are the counterpart of sopranos in the male voice. Hence they establish — like sopranos — the essential quality recognized as characteristic of the ***medium register*** in male voices; while baritones and basses establish the characteristics distinguishing the chest register of the male voice. This fact must be well understood to conceive the cause of the error met with in most vocal methods, as to the nature of the registers in the male voice. A great number of vocal teachers entirely ignore the existence of the medium register in the male voice.

as some do in altos (31, *C*); while others, like Garcia and Stockhausen, claim the medium in the male voice to be identical with the falsetto (see 23). The vocal mechanism of the male voice is identical with that of the female voice. The vocal range being about the same — an octave lower — the physical functions producing the registers are the same.

B. The *medium register* is produced by tenors in their natural or normal position of the larynx (26). This easy singing range embraces about an octave, and is found in the middle of a tenor's vocal compass, at *b*. Lyric tenors produce this easy singing range — or medium register — in a light quality of tone; while dramatic tenors have a fuller and more powerful medium range. Both, however, produce these tones with the natural, or normal mechanism of the vocal organ. This normal vocal mechanism is therefore to be considered the model function in the male voice producing the medium register.

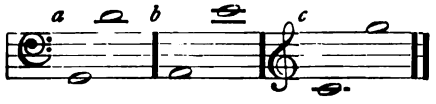
C. Neither the tones in this medium range of tenors nor the lower tones in the chest range at *a* have the chest tone quality of baritones and basses, as regards fullness, resonance, and ease of production. Hence it is illogical and a misstatement of facts to call these tenor tones (at *f*) chest tones, even if they are produced with as great an expansion of the cup as possible with tenors. The tenor tones in the medium and chest range are obtained by a more closed proportion of the larynx and cup than is present in baritones and basses producing the same tones. They partake, therefore, of the male medium tone quality of tenors — not chest quality of baritones or basses; so that the lyric tenor tones in the chest range at *a* seem to be produced with the medium mechanism, being really but an extension of the medium register downwards, as at *d*. These lower tones are consequently always weak and without carrying power. The case is similar with this range of tones in soprano and alto voices (see 27, A).

D. The tones in the head range of lyric tenors, at *c*, have either a pure head tone quality, or partake more of the thin falsetto character. In dramatic tenors the head tones are always full and sonorous. The vocal mechanism is the same for both; the only difference being that lyric tenors have not the large cup space of dramatic tenors, which is responsible for the full tone quality. Baritone tenors of the Jean de Reszke type have even a larger cup capacity than dramatic tenors, which requires very careful and painstaking cultivation to enable them to produce artistic head tones. The three different types of head tones produced by lyric and dramatic tenors and baritone tenors are due to the nature of the cup capacity (see 28, *Note*). This head tone range at *e* can be brought down to embrace the four upper tones of the medium range (at *b*). These upper tones at *b* should therefore be cultivated in the medium register for phrases requiring volume and power. If produced in the head register they are especially adapted for the delivery of subdued piano phrases — if properly cultivated (see 30, B).

E. The head tones require a certain muscular effort to emit them with fullness and sonority. If these head tones are to be sung pianissimo this muscular tension will be decreased, which naturally will necessitate a relaxation of the muscles controlling the cup walls (Fig. 6, *h*, *h*) and pocket bands (Fig. 6, *d*, *d*). This action produces the falsetto position while the pitch of the tone is continued. This change of position of the cup proportion from a forte tone in head to the pianissimo tone in falsetto necessitates the most careful cultivation before artistic results can

be obtained (see Sect. 29), Exercises 49, 50.

Note. Before proceeding to the explanation of the bass voice it will be àpropos to give a short review of some of the opinions extant among vocal teachers concerning the registers in the male voice in general. While many recognized authorities on voice training mention the existence of the chest, medium, and head registers in men's voices, yet *not one* gives an explanation of what constitutes the medium register. Garcia claims that in men's voices, as in women's, the three registers co-exist, but the chest predominates; *the other two being but a remnant of the boy's voice.* What Garcia means by this last sentence he does not explain; nor does he give any importance to the medium register, which he considers identical with falsetto. He conceives no difference in the vocal functions producing the middle tones of the tenor, baritone and bass voice. He says: — "Men's voices generally employ the chest register, which ought not to embrace more than the compass of a twelfth — in basses from G to D (at *a*), in baritones from A to E (at *b*), and in tenors from C to G (at *c*)."

Exp. 10.

Stockhausen says: "Men make use ordinarily of two registers — chest and medium (or falsetto). Only in exceptional cases can tenors use head tones." Here is confusion worse confounded. He calls the medium falsetto, like Garcia, but applies the term "head" for the thin falsetto.

Lamperti teaches but two registers in the male voice — chest and mixed; the chest tones embracing the lowest and middle range of the male voice in Exp. 1, *a* and *b;* and the mixed voice embracing the highest range, Exp. 1, *c*, and the upper half of the middle range, at *b*.

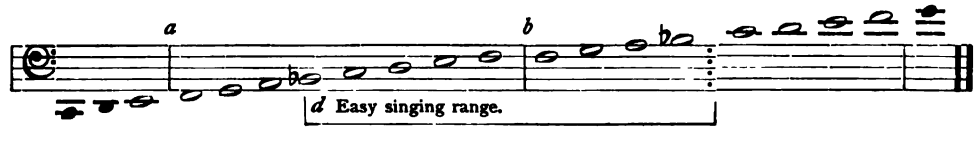
It will be seen from the foregoing that the medium register is ignored, and that the function in the production of the upper tones is no better understood. Garcia asserts that the upper tones are produced in chest; Stockhausen says medium, or falsetto; and Lamperti claims they are mixed tones. Neither one nor the other of these three foremost authorities on vocal training gives any physical reason for his claims. It is unprofitable to enumerate the many other unscientific and chimerical theories.

33. **Basses.**— The lowest vocal range of the male compass is obtained by three kinds of bass voices: — *basso profundo*, or lowest bass; *basso cantante*, or flexible bass; and *baritone*, or highest bass. The complete compass of these three basses is as given in Exp. 11: —

This compass of the three bass voices embraces the lowest, *a*, and middle range, *b*, of tones constituting the vocal range of the male voice (Exp. 1, *a*, *b*, *c*); of the highest range (at *c*) it produces only the first or lower tone. The tones in the middle range of the male voice, at *b* — which are really the tones establishing the medium register of tenors — *are not in the middle easy singing range*

Compass of Basses

Exp. 11.



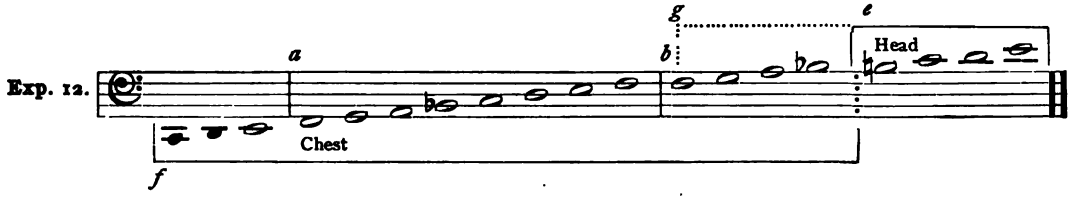
of basses. So that the middle range of vocal tones of the male voice is found as middle tones, or middle register, only in tenors (Sect. 32); while the middle tones or easy singing range of basses at *d* are found in the lower range, or chest register (Exp. 12, *f*).

A. The *basso profundo*, or lowest bass voice, produces its best tones in the chest register; similar to the robust contralto (Sect. 31). In fact the basso profundo, and basso cantante, have many features in common with the contralto, as regards identity of range and peculiarities in the nature of the registers. The compass of these two basses is as follows: —

proportion, approaching the medium form (Fig. 3), or it will produce the falsetto position (Fig. 4). This is therefore a kind of mixed position which also produces a kind of mixed tones.

Heavy bass voices cannot produce the pure medium tone quality of tenors, owing to the fact that their large pockets (Fig. 2, *c*) cannot be reduced sufficiently to establish the smaller cup proportions necessary to produce the medium tenor tones (Fig. 3, *c*). The middle range of tones, at *b*, are therefore uncertain tones in all heavy bass voices. A certain number — say four, five, or possibly six — can be produced in the chest register (*f*), if delivered forte; but the upper tones, at *e*, cannot be produced in chest in every bass voice. And since they

COMPASS OF BASSO PROFUNDO



The chest register extends from the lower range, at *a*, to the four lower tones in the middle range, at *b*. In the production of the latter four tones some basses experience a change in the vocal function, which no doubt is caused by the slight change necessary in the proportions of the cup, if these four tones are not produced in the chest register. To obtain these four tones in chest a certain degree of added energy in the vocal organ is required, particularly if these tones are to be sung forte. If this muscular energy is not employed the muscles expanding the cup (Fig. 6, *h*, *h*) for the production of the chest tones will relax, as also the position of the pocket bands (Fig. 6, *d*, *d*,); and this change will establish either a smaller cup

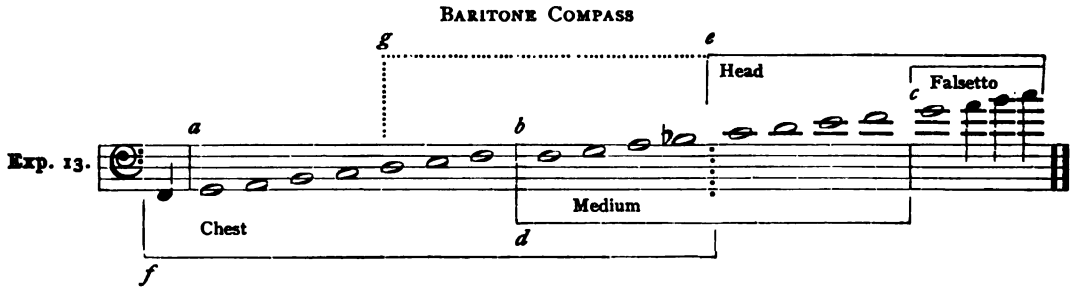
cannot be obtained in the pure medium register, some compromise must be effected for the production — in a forte phrase — of these high tones. This consists in cultivating this part of the bass voice to enable the singer to produce them in a full head tone quality, which ought to be carried down as low as possible (at *g*), so as to include as many of the upper tones in this range (at *b*) as can be obtained. Without this proper training a bass would ordinarily produce these high tones in a thin falsetto, not in keeping with the full quality of the lower tones in chest. The artistic cultivation of these tones depends therefore entirely on the natural capacity of the singer. If he is able to control the muscles of the cup walls (Fig. 6, *h*, *h*) and

pockets (*d*, *d*,) so as to produce the necessary cup form, he will be able to produce these high tones with some ease. Otherwise he will always have a difficulty in reaching them with any other than a light and thin head tone quality. This tone timbre may be useful for soft delivery in subdued vocal expression, but not for any other purpose. These tones in head (at *e*, *g*) are much weaker than those produced by some basses in the falsetto range proper (Exp. 13, at *c*), which have the quality of the boy alto, while some baritones can cultivate these falsetto tones in a full and resonant tenor quality (28, B) Exercises 44–46.

B. The *basso cantante*, or flexible bass, is a deep bass voice with a greater capacity for the execution of passages requiring suppleness and agility. Otherwise the voice is like the basso profundo, and is subject to the same treatment.

C. The *baritone* has not the same full and heavy tone quality of the basso profundo, nor does it reach the lowest tones of the bass range. Baritones have, however, a natural facility to produce not only the few higher tones of the bass range (Exp. 11), but some of them are able to obtain the same large range of tenors in the head register; viz.: in medium (at *d*) and head (at *e*, *g*), and the highest tones in falsetto (at *c*) or head (at *e*). This extraordinary condition of the vocal organ of some baritones is not recognized nor utilized by the vocal teachers. Stockhausen, who was himself a celebrated baritone, speaks only of the chest and falsetto, or medium as he calls it. He insists that the head register should be rarely used. Now it is most likely that Stockhausen — being a pupil of Garcia — applies the term "falsetto" for head; for the head register can be brought down to include the whole range of medium tones (at *b*) and part of the tones in the chest range (at *a*), as is indicated at *g*. But there is extant a medium register *quality* in some baritone tenors, like Jean de Reszke, which has the robust tenor timbre. This cannot be obtained in the chest — as we find it in basses — nor in the head, but is found only in tenors, produced in the natural medium, or easy singing range of tenors. This is not mentioned by Stockhausen, Garcia, nor any other vocal expert.

E. Some baritones have the gift to produce the tones in the middle range (at *b*.) in the medium register; they are consequently like robust tenors who have no



D. Such exceptionally endowed baritones have the same natural capacity of a certain type of contraltos (31, A) for producing the three different registers: their low tones in chest (at *f*), the middle tones real chest tones (27, A, 32, *C*). Baritones of this type have not the same full tones in chest of basses; their chest tones are lighter, and are easily connected with the higher tones in the medium register.

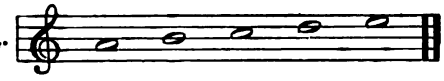
There is in fact very little difference between this class of baritone tenors and heroic tenors. The same feature is to be observed in some contraltos, whose chest tones are like those in medium. And yet the vocal function producing both is different. The same physical changes are present in such baritones. The natural baritone voice should be cultivated first, as this constitutes the basis of the natural condition of the voice. The development of the tenor quality is an artificial cultivation, which should not be undertaken unless there are indications of exceptional conditions justifying such training. The baritone voice, like the alto, is subject to the grossest mistreatment on the part of vocal teachers who do not understand the peculiar physical feature of some baritone voices. I have met with baritones whose voices were trained to produce only the head tones throughout their vocal range; the tones were consequently effeminate, and lacked every masculine quality; nor could they produce a tone of any resonance below the *D* on the third line (Fig. 13, at *g*). They had no chest tones, and could therefore produce no forte, nor a swell tone. Such training is absolutely useless for professional purposes. Again, others were trained as basses, and their higher range in head was neglected, since the teacher was incapable of developing the falsetto into a good quality of head.

F. The highest tones in the baritone range, at *c*, are produced either as thin falsetto tones, or may be developed in a full head quality. The falsetto tones are useful for piano passages to contrast with the fuller head tones at *e*, and should be cultivated to this end. The lower head tones (at *g*) should be cultivated for piano phrases to contrast with the fuller chest tones (at *f*) or medium (at *d*). These two phases of voice training are imperative; as no swell tone could be produced without them, nor an artistic diminuendo. (Exercises 45–46, 51, 52.)

34. Child Voice. Before the age of fourteen or fifteen there is little difference in the form and proportions of the larynx of boys and girls. In the earliest period of childhood the pocket bands are located very low in the larynx (Fig. 4), and the pockets are undeveloped, as Merkel tells us. Hence young children produce only falsetto tones in a small range of tones. This small falsetto compass is located somewhat around the tones *A* and *E*, as follows:

CHILD FALSETTO COMPASS

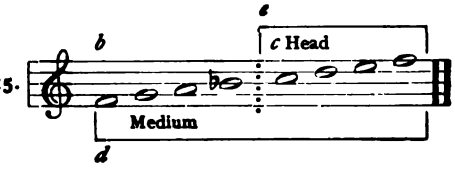
Exp. 14.



A. In the more advanced period of childhood, the muscles of the larynx being more exercised, the pocket bands also become more developed and rise to a higher position in the larynx, which causes an enlargement of the cup space above the vocal cords (Fig. 4, *d*, *d*). This change of the pocket bands enables the production of the easy singing range of boys' and girls' voices; which is identical with the middle range of the female voice — the middle or medium register of sopranos, viz.:

EASY SINGING RANGE OF BOYS AND GIRLS

Exp. 15.



B. Children with timid dispositions or weak constitutions will be apt to continue the production of the upper section, at *c*, in falsetto. It would not be advisable to try to obtain these tones in a fuller head

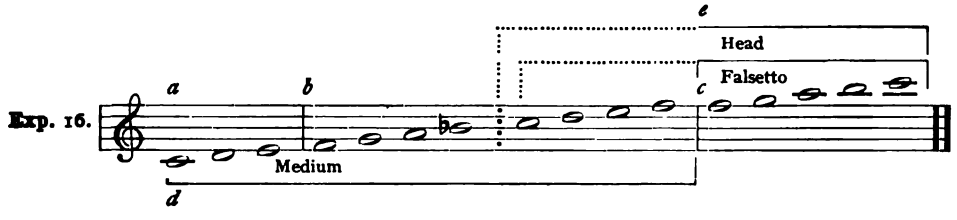
quality, as at *e*, before the child is able to produce the lower section at *b* in the medium. The whole range of tones in the medium at *d* can be obtained by degrees only. To insist on every child producing this middle range in medium is wrong, and would be apt to force the voice, which in every case is harmful. The careful training of the delicate voice of the child should begin, in fact, when the child begins to sing.

C. As the child develops physically, the power to control the larynx muscles increases, so that the voice range expands in both directions, upwards and downwards. Before the period of puberty the voices of boys and girls continue to produce the tones below the easy singing range in the *medium register* (Exp. 16, *d*), and upwards in the *head*, or *falsetto register* (Exp. 16, *c*, *e*); having the capacity to obtain the same vocal compass of sopranos, viz.:

ment of the muscles of the male voice brings about the change in the proportions of the larynx. Hinder this muscular growth, and you retain the female voice, as was the case with the castrati of old. The muscular training obtained by the boy is therefore of value to him after mutation.

35. **Mutation,** or change of voice, takes place in the vocal organ of boys at puberty, between the age of fourteen or fifteen; in some earlier, in others later. In this physical development of the vocal organ of boys, the soprano range gives way to the male compass. What the secret is which produces this drop in the vocal range of boys of from one to almost two octaves in the same vocal organ has been as much a mystery to the medical experts as it is even now to vocal teachers. Dr. Lenox Brown, one of the foremost English voice specialists, says: "The uncertainty of the

COMPASS OF THE CHILD VOICE



Note. Such an extensive vocal compass can be acquired only by a careful training of the child voice. This vocal range is not uncommon among the choir boys of the English and American churches. It has frequently been suggested that such a training of a boy's voice is without benefit to the boy after the change of voice. This is a wrong conception of the functions of the vocal organ of the male voice before and after mutation. The muscles of the vocal organ are the same before and after the change of voice. In fact, the development

boy voice during the time of mutation is a curious phenomenon — not easily accounted for." And yet it can be accounted for, on a logical physical basis, if the medical profession would take into account the physical influence brought about by the change in proportions of the cup cavity at the time of mutation. This has not been done. Physiological investigators have centered their attention solely on the visible parts of the inner larynx, the vocal cords in particular, leaving out of question the influence of the cup cavity

on tone production, and consequently ignoring the alteration in the cup form during mutation. But in this lies the secret, which I have been able to demonstrate in my various experiments. This peculiar feature of the larynx active in tone production cannot be observed by laryngoscopic investigation. All that can be seen is that the boy larynx before mutation — being round, like that of girls — develops more in width and depth, but less in height; so that it obtains almost double its former proportions. During this period of change, lasting from three months to three years, the vocal cords increase in length and thickness. Now if we take into consideration the fact that this cartilaginous and muscular growth is going on before the change or break in the boy's voice takes place, that the vocal cords are becoming longer and thicker by degrees,— we must also take into consideration the corresponding fact *that the inner space of the pockets is growing in dimensions,* in proportion as the whole boy larynx is developing in width and depth. That is to say: the pockets become longer and wider. The space between the walls of the pockets (Fig. 6, *h, h*) and the partition of ligaments dividing the pockets from the vestibule (Fig. 6, *e, f*) becomes much wider, and the opening into the pockets (Fig. 8, *c*) becomes longer. During this natural physical growth of the boy larynx the muscles are in a weakened condition, and the tissues are loose and flabby. Now, inasmuch as the muscles employed in the production of vocal tone are exercised and strained to a considerable degree of tension during singing, there would come a period when the tissues limiting the smaller female cup proportion of the boy would give way, tear asunder, or break, and at once produce the larger pockets, and the corresponding larger cup proportion of the male larynx. This change may occur over night, as was the case with the celebrated bass singer Lablache, who, having over-taxed his boy voice one evening at a concert, found his voice changed in the morning to a rich bass. When this break of the invisible tissues has taken place the muscles are unable to control the function of the new conditions of the vocal organ; and the result is that the voice slides up and down, or wabbles about, at one time producing the previous female tones, and the next moment emitting low male tones. This is due to the fact that the vocal organ assumes alternately the original position of the boy voice, and the changed position of the male voice. This is evidence of the fact that the male voice, even after mutation, can assume the conditions producing the former boy voice. This peculiar feature continues until the muscles have become sufficiently strengthened, and the tissues properly hardened, to produce the necessary permanent firmness of the organic parts to establish the male compass. Now such vocal organs of men that have the natural capacity, in spite of this mutation, to contract the pockets to reëstablish the previous form of the boy larynx — or female cup proportion — will be able to produce the female or boy compass. Garcia is right in his claim, therefore, "that the falsetto in the voice of men is a remnant of the boy voice." And the source of the phenomenon as here explained, is to be attributed to the capacity of the singer to reduce the proportions of the cup to its original boy size, and not to that absurd theory, which assigns it to the vibration of the thin edges of the vocal cords.

Since this change occurs entirely in the invisible pockets, on each side of the inner larynx (Fig. 6, *c*), there is consequently at hand a good reason why the medical investigators have not been able to observe this

change with the aid of the laryngoscope. If, as I have pointed out, in 25, *Note*, a difference in the width of the cup of one quarter of an inch will produce a lowering of the pitch of from five tones to an octave, surely an increase in the cup space of from half to double the original proportions of the boy larynx must bring about the drop in the boy voice from the female to the male compass. Where the vocal organs of the boy are not exercised or exerted in singing, the change is more gradual and less abrupt.

In the case of girls the development at puberty is different from that of boys. The pockets do not expand in width and depth, hence there is no break in the female voice, except in the case of robust altos, who have more the masculine development. In sopranos the pockets increase slightly in height, so that the upper wall between the inner larynx, or vestibule (Fig. 6, *e*), and the pockets (Fig. 6, *c*, *c*) becomes more free than before mutation. In the production of high tones this upper part of the vestibule is contracted, and this function is conditioned by high pockets, which permit this free action of the upper walls of the vestibule.

A. As to the question whether boys during the period of mutation should continue to sing, or cease from all vocal efforts, I would suggest a careful investigation of a boy's physical condition. As long as the voice continues to waver between the uncontrollable emission of the alternating female and male range, he should stop all singing. But as soon as the voice is fixed in the new male compass it will not be harmful — if the boy is constitutionally sound — to exercise carefully the new voice *in the easy singing range*, and gradually extend this range, as the muscular strength increases. The falsetto tones require the least muscular effort, hence they should be improved, little by little, until the fuller head tones are obtained. The head tones require a contraction of the pockets, and should be omitted if a bass singer desires to improve his lowest tones, for the latter demand the utmost expansion of the pockets and trachea. It would require a longer time of vocal training to develop both extremes in a bass voice.

B. In the case of altos, tenors and baritones it would be advisable not to neglect the functions which produced the female tone range before mutation, but to continue their production as much as possible, since the falsetto and head tones must be obtained by assuming the position in the larynx extant before mutation. The muscles still being accustomed and in readiness to perform this function would accommodate themselves more readily to the new conditions than later if they were neglected.

36. Break in the Voice. — An insufficient muscular tension, or an over-exertion of the muscles in the production or emission of a vocal tone, will result in the loss of muscular control, and produce a break in the singing voice. This is apt to occur when in the emission of a high tone — in any of the registers — the muscular power to maintain the expanded cup form necessary for the production of a powerful tone is insufficient, causing the break, which produces a smaller cup proportion, and also a less powerful tone. Or, if in the emission of a soft, subdued tone the air current expelled from the lungs is too strong, forcing the smaller cup proportion to expand or open, which necessarily also changes the tone to a more powerful quality.

In both instances the change, due to a lack of muscular control, coming with the change of the cup proportions, also causes a change in the quality of the vocal tone.

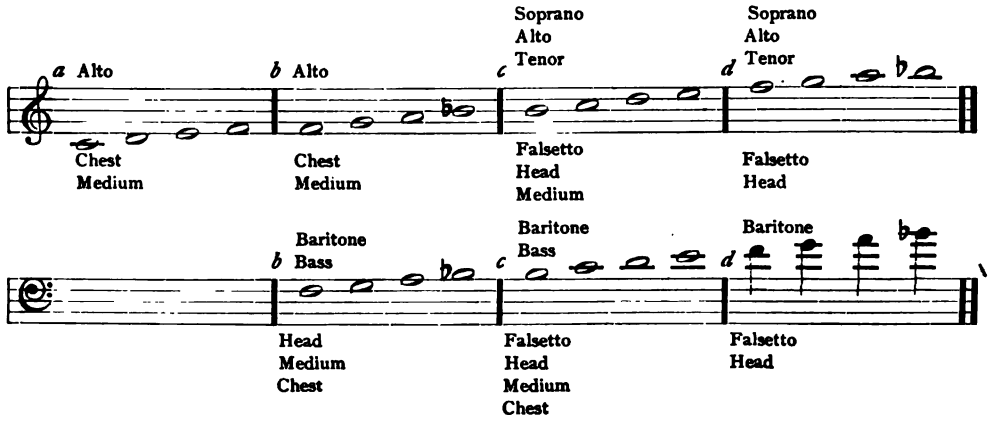
But the break frequently destroys the vocal tone completely, and produces only a squeak, or a toneless noise, which always results if the muscular control is entirely lost.

The break is therefore more apt to occur on those tones in the different voices which can be produced in two different registers, indicated in Exp. 17.

A well-trained vocal artist is rarely subject to a break in his voice. It demonstrates an artistic deficiency, which can be overcome only by experience, training and good judgment.

BREAK IN REGISTERS.

Exp. 17.



PART IV.

Tone Blending.

37. Sustained Tone — Tremolo. — The basic element of vocal culture is the well-sustained vocal tone, the emission of which requires a perfect control and artistic manipulation of every part of the vocal organ. The three essentials coöperating in the artistic production of a sustained vocal tone are:

1. A perfectly proportioned and well-managed breath current, obtained by the action of the lungs, diaphragm and trachea.

2. An exact adjustment of the larynx cavities, particularly of the pockets and vestibule, where the breath current becomes tone.

3. A correct formation of the pharynx tube established by the action of the tongue, soft palate, teeth and lips, the management of which makes or mars the quality of the tone generated in the larynx.

Any shortcoming in the conditions co-operating in these three factors will react on the nature of the vocal tone produced.

A. Correct breathing may be taught, but the application and management of the breath in the production of vocal tone cannot be acquired, except by personal experience and good judgment on the part of the singer. The vocal teacher can guide the student, but he cannot guarantee artistic results, where the pupil lacks the power to judge of and apply his own experience. Too much breath may be as harmful as too little. The breath current necessarily varies according to the emission of high or low tones, piano or forte, crescendo or decrescendo, in the upper or lower tones of the same pitch in two registers, — and becomes a most difficult function in the production of the swell tone (47). Hence a steady and well-regulated air current is imperative in the emission of a well-sustained vocal tone.

B. With the best of breath management it is yet impossible to produce a good quality of tone if the proportions of the larynx cavities are not as they should be. A slight disproportion between the opening of the glottis, the size and form of the cup, the position of the pocket bands, the width of the vestibule, the action of the epiglottis, will interfere with the quality, pitch and volume of the tone produced.

C. Before the tone issues from the mouth it may be influenced for good or bad by the nature of the pharynx, the action of the tongue, the position of the soft palate and uvula, and the place and form of the teeth and lips. For in this upper part — or resonance tube — of the vocal organ the tone may be changed and varied in timbre, resonance, brilliancy and steadiness. If the pharynx tube is naturally well formed for a resonant emission of tone, the action of the tongue is not apt to be troublesome, or beyond an easy control; but where the pharynx tube is not naturally favorable as a resonance tube, and the tongue has to establish it, in this case the management of the tongue is a most difficult undertaking, requiring long and patient practice combined with good judgment, before a uniform, even and well-proportioned vocal tone can be obtained throughout the whole vocal range of a singer's voice. I have observed singers — altos and baritones with large throats, in particular — whose tone varied with every

change of vowel, and every change of pitch, due chiefly to the action of the tongue in its effort to fix the proper proportions of the pharynx tube.

D. The emission of a well-sustained tone requires a firm and steady action of the muscles employed. Any unsteadiness in the muscular functions will result in an uncertainty in pitch or an unsteadiness of tone, which produces the so-called *tremolo*. The tremolo is due either to a constitutional weakness of the muscles, or is the result of insufficient training. Some singers — as well as teachers — do not seem to be able to distinguish between the objectionable tremolo and the artistic *vibrato*. The tremolo is more frequently the cause of weak and unsteady pocket bands (Fig. 6, *d*, *d*), which wabble back and forth and tremble, in their effort to produce a steady muscular tension in emitting the tone; although it may also be due to an unsteady diaphragm (Fig. 5, *y*). The vibrato, however, is an artistic phase of tone obtained only by such voices having a natural facility to assume any muscular position with ease, without having to resort to a *rigid tension* of the muscles. The vibrato results therefore from an easy control of the muscular function, while the tremolo is due to muscular weakness, or lack of training. If the muscles are weak, the whole physical organism must be built up; but if the training has been insufficient, a course of proper exercises will serve to correct the objectionable feature of the tremolo.

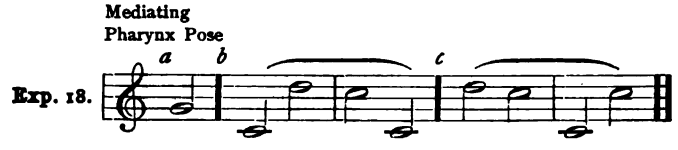
38. Legato. — As the sustained tone is the basic element of vocal culture, so the legato style is the basis of artistic vocal delivery. The term *legato* refers to a uniformly even, well-connected and smooth delivery of a succession of tones of different pitch, in one breath, in opposition to an emphasized or marked — marcato — delivery. The legato style of delivery is the criterion of artistic singing, and is conditioned by a perfect control of the three elements active in the production of a sustained tone — described in the preceding section.

There are three phases of the vocal functions connected with the legato delivery of two tones of different pitch in the same breath. These functions consist:

1. In continuing the same breath pressure and breath current, while the proportions of the larynx cavity change in producing the higher or lower tone. This action takes place in a quick succession of two tones a small interval apart — as in the production of the trill — in which case the motion of the pocket bands (Fig. 6, *d*, *d*) is responsible for the change of pitch.

2. In retaining the form of the larynx cavity, while the pressure of the breath changes, whereby the tone a small interval above or below is produced. This action takes place in emitting a lower tone with less dynamic force, or a higher tone with more dynamic force.

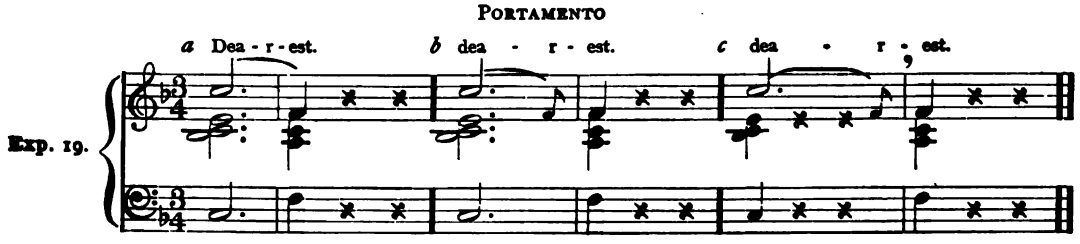
3. In exercising both functions, indicated in 1 and 2, simultaneously. This function of both phases combined is necessary where the two tones to be delivered legato are a considerable interval apart. If the lower of two tones were to be produced by the change in the pocket bands alone — which is a bad habit of some singers — the sudden relaxation of the pocket bands would produce a sort of yawning effect in delivering these tones. An equally bad habit is practiced by some, consisting in forcing the pitch of the higher tone by an increased breath pressure alone. This imposes a greater strain on the muscles of the pocket bands than if the pocket bands were to change their position simultaneously with the change of breath pressure. (Exercises 53, 54.)

Note. There is a feature connected with the legato delivery of two tones a considerable interval apart which affects the position of the pharynx and which is very little understood by singers and teachers. It consists in assuming a pharynx pose for a tone imagined to be located in the middle between the lower and higher of the two tones to be delivered legato, as here indicated, at *a*.

By assuming the position of the pharynx necessary for the easy emission of the tone *G*, at *a*, and *maintaining this pharynx position* in delivering the phrase, at *b* and *c*, the pharynx pose mediates between a too open position for the lower tone, and a too closed position for the upper tone. The legato is thereby made possible, as the *mediating pharynx pose* hinders the two extreme pharynx positions, and aids in equalizing the tone power and tone quality, as well as the muscular effort necessary in producing the two tones (C, D) a ninth apart. This artifice of employing a mediating pharynx pose is most effective in producing the portamento. (Exercises 57, 58.)

39. Portamento — Strisciato. — By the Italian word "portamento," meaning "to carry," is comprehended a peculiar artistic manner of carrying the voice from a lower to a higher tone, or vice versa, in opposition to the inartistic manner of sliding or dragging the tone up or down, which Italians call "*strisciato.*"

The portamento is similar in effect produced by a violinist in sliding with the same finger on the same string from a lower to a higher tone, or from a higher to a lower tone, thereby producing a gradual rise or fall of the pitch between the two tones. If this is not done properly it produces a dragging or drawling effect, which is most inartistic.

A. In the production of the portamento the larynx cavity changes by degrees through the action of the pocket bands (Fig. 6, *d*, *d*), as the pitch produced rises or falls, and the breath current also changes in proportion. In emitting an upward portamento the larynx cavity contracts, and in a downward portamento it expands. The action of the pocket bands in this function must be obtained with *a steady and firm position of the larynx as a whole*, and the pharynx should assume a mediating pose (38, *Note*). The whole muscular function must be easy, but not loose. A rigid muscular action would make the portamento impossible. (Exercise 59.)

B. The two tones which are connected by the portamento may be found in the

same register, or in two different registers. In the latter case, the portamento becomes a most important factor in connecting two registers. There are usually two vowels or syllables employed in the production of the portamento. The first vowel is continued during the upward or downward movement of the voice in carrying the pitch from the first to the second tone. The second vowel or syllable is delivered simultaneously with the emission of the second tone, as at *a*. The portamento is sung on the pure vowel, and the ending consonant (the *r* in example at *a*) must be quickly but distinctly sounded at the very end of the first vowel tone, before the second tone is emitted. The second vowel or syllable serves for a distinct attack of the second tone, as is indicated above by the division of the word "dearest."

Stockhausen teaches that in the portamento the voice should not anticipate the pitch of the second tone (as at *b*, *c*) before it is to be sounded on the second vowel or syllable in its proper place in the measure. Garcia and Lamperti discard this rule, and insist that the voice should reach the second tone, with the first vowel, slightly before the tone is to be emitted on the second syllable (as at *b*, *c*). Stockhausen's rule is too rigid, and Garcia's and Lamperti's teaching is frequently subject to abuse, as its practice is at times most unmusical. In the example at *b*, for instance, the anticipation of the tone F — while the dominant chord with the tone E is still retained — is absolutely unmusical, producing more or less a discord in proportion as the singer holds the anticipated tone F. This anticipation is not objectionable where it does not clash with the accompanying harmony, as at *c*. Cases of the latter sort, if well rendered, are very effective. In case a breathing pause is necessary between the last two tones, it should be made *after the portamento*, as at *c*, even if it divides the two syllables of a word, which is objectionable otherwise. (Exercise 59, 60.)

C. The *strisciato*, or bad habit of drawling or dragging the voice up or down in the portamento, is caused either by too abrupt a relaxation of the pocket bands, or bad management of the breath. It indicates a lazy, indolent muscular function, which can be corrected by energetic exercises of the vocal organ.

Another bad habit resulting from this lack of muscular energy in managing the clear production and connection of tones is observed in some voices when, in attacking a tone, the singer fails, mentally, to conceive the pitch of the tone to be started, emits a tone below or above the one intended to be delivered, and upon hearing that the started tone is too low or too high, the singer produces the *strisciato*, by sliding up or down with the voice, searching for the right tone, which the Italians call "*Cercar la nota.*" This bad habit is evidence of a mental laziness corresponding to the indifferent muscular action in the production of the strisciato. It can be remedied only by practicing the attack of the tone by the proper ready pose. (Sect. 9.)

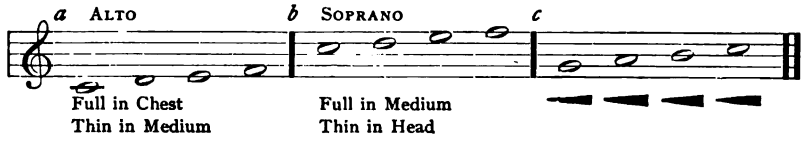
40. Tone Volume. — Tone volume is not identical with a loud tone, but consists in a certain fullness or magnitude of tone. A tone may be delivered softly and yet have volume, whereas a tone may be loud and lack volume. The four tones at *a* (Exp. 20) delivered by a rich alto voice have more volume if sung in the chest register than in the medium, and the four tones at *b* delivered by a dramatic soprano in the medium register have more volume than if produced in the head register.

Volume is the result of a larger expansion

or proportion of the larynx cavities, particularly of the cup. (See 25, *Note.*)

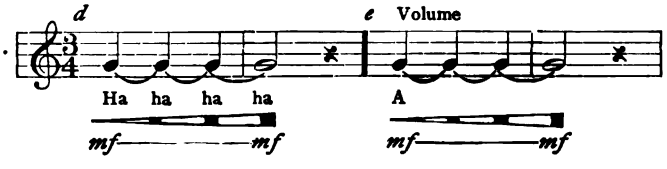
A. The change in tone volume can be best exemplified by singing the series of tones produced in two registers, at *a* and *b*. The larynx cavity expands in changing the tones at *a* from medium to chest in altos; as also in the change from head to medium in sopranos at *b*. The case is reversed; that is, the larynx cavities contract in changing from the chest to medium at *a*, and medium to head, at *b*. These series of tones could therefore hardly be changed in volume without a change of registers. It would consequently be more advisable to begin the study of tone volume on the series of tones at *c*, where the change of register in altos and sopranos is not so apt to take place. The increase in tone volume is indicated at *c* by a wedge-shaped sign. It must be well understood that *increase in volume does not mean increase in tone power*, and is not identical with a crescendo. The repetition of the same tone with the aspirate H preceding a vowel is a practical exercise in obtaining increase in tone volume (at *d*, Exp. 21), as a preliminary to producing a voluminous tone without change of register on a pure vowel at *e*.

TONE VOLUME

Exp. 20.

B. Male voices have not the change of registers characteristic of female voices. Hence the change of registers in producing tone volume is made use of only in the upper range of men's voices. The exercise at *d* is therefore most useful in obtaining tone volume for all male voices

Note. The *mezza voce*, or half voice, does not necessarily refer to a tone decreased in tone volume, but to a decrease in tone power. In the production of a mezza voce it should be the object of the singer to retain the tone volume while the tone power is reduced. Even in the mezza voce the voice should have a carrying quality, which necessitates a certain degree of breath pressure combined with a muscular tension necessary to expand the cup to produce tone volume and resonance of the singing voice. (Exercises 61, 62.)

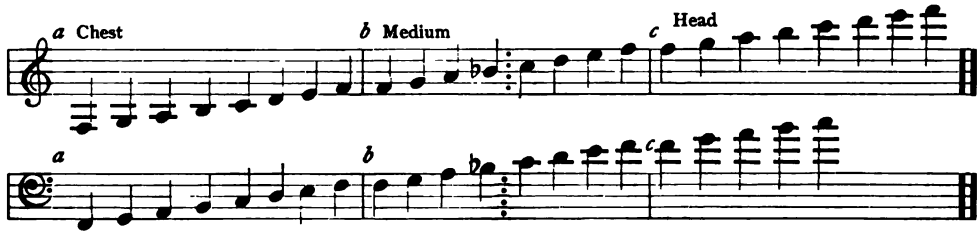
Exp. 21.



41. Blending of Registers. — The blending of registers has reference not only to the even connection and smooth change from one register to another, but also to the equalizing of tone quality of two different registers. Both these artistic phases of vocal culture require a fine and cultivated musical ear on the part of the teacher and pupil before they can be realized. At the very outset of the training of a singer's voice, special attention must be given by

the teacher to the equalizing of tone quality, or blending of every section of the vocal range. This means to say: no register should be over-developed so as to preclude the possibility of equalizing the vocal range. *It is imperative therefore that the registers be limited* — during the first period of voice training — *to the smaller vocal range of each register indicated in Exp. 22*, and not before the singer is well able to produce his complete vocal range in the narrow limit of each register here indicated should any attempt be made to extend the limit of the registers.

In the first period of voice development the limit of the three registers should therefore be confined to the lower, middle, and higher section of the vocal range, at *a*, *b*, *c*.

Exp. 22.

A. In altos the lower section in the chest register should not be over-developed, but should be cultivated so as to produce the proper volume and tone quality to harmonize with the medium tones, at *b*. If the lower tones in medium, at *b*, are thin or weak, they should be improved. And if the tones in the chest register are too masculine and heavy, they should be subdued. The four lower tones in the medium range, at *b*, should not be cultivated in the chest register unless the four highest tones in the medium range, at *b*, are of an equal volume and quality. (See 31, B.)

B. In sopranos the tones in the chest range are usually weak and thin (30, B, C); they require consequently much careful practice to improve them, as also the lower tones in the medium register. The tones in the head register can also be improved in volume by the expansion of the inner larynx cavity (see 40, A). Exercise 63.

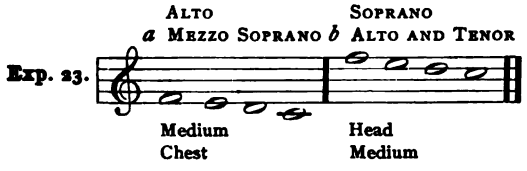
C. The lower tones in the chest range in tenor voices are also usually weak and thin compared to those in the medium. In tenors as well as sopranos these lower tones as well as those in head can be improved in volume and resonance only by an expansion of the cup proportions. Whether these voices possess this capacity for cup expansion can be demonstrated only by the proper exercises (see 32).

D. Basses have most difficulty in producing a good resonant quality in the highest tones of their compass — the four highest tones, at *b*. The teacher must use the resources of his knowledge to obtain for bass singers an easy and effective method of producing these tones, (see 33, A). Exercise 64.

E. Baritones should produce the highest four tones, at *b*, in the chest or medium, but not in head, at first, so that the quality harmonizes better with that of the lower tones in chest. If the singer has the capacity to produce the highest tones, at *c*, in head, the teacher must decide whether these tones can be trained for artistic purposes.

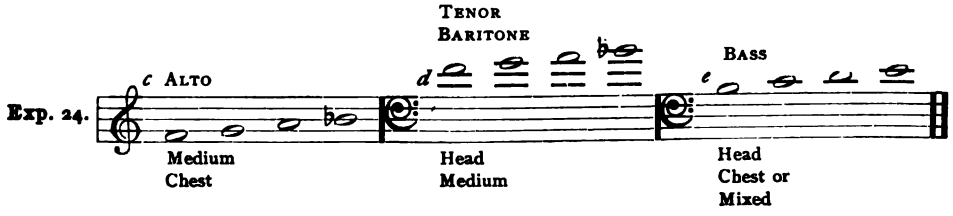
Note. It must again be emphasized that a singer's voice should be trained to produce his complete vocal range within the narrow limit of each register indicated in Exp. 22, before the more artistic and of course more difficult development of the use of the registers described in the follow-

ing section is undertaken. Very few singers acquire the artistic management of the registers required of the perfect vocal artist. If they are therefore not well grounded in the elementary degree, which assures them a practical and useful training for ordinary purposes, a smattering of this more artistic training would be more a detriment than a benefit to singers, since they would possess no reliable basis to practice their vocal art, and enable them to improve their own vocal organ. The ruin of so many good voices is due to this insufficiency in establishing a healthy muscular development of the vocal organ before the artistic training, which must follow the elementary, is undertaken.

42. Crossing of Registers. — Every vocal organ has the natural capacity to produce in some registers a greater number of tones

than is indicated in Exp. 22. Although a singer may possess the ability to extend some registers, it is not always advisable to do so, unless the extension is justified by the acquisition of a greater usefulness of the vocal organ in the direction of artistic facility. Every additional extension of the registers requires a longer period of training, and where this is not absolutely necessary, and justified by artistic results, it had better not be attempted. But in cases where an exceptional voice gives promise of artistic possibilities it is the duty of the teacher to cultivate every phase of the vocal organ. For it is the exceptionally gifted artist that obtains recognition and success, which will also reflect favorably on the successful labors of the teacher.

A. A downward extension of the registers is practical in two instances, namely: where the medium register is continued into the chest range, as at *a*, and where the head register is carried into the medium range at *b*. Both of these extensions are practical in soprano, alto, and tenor voices.

B. An upward extension of the registers is feasible in continuing the chest into the medium range in robust alto voices, as at *c;* and in continuing the medium in heroic tenors and exceptional baritones into the head range, as at *d*, as also in extending the chest into the head in basses, at *e*.

C. It is a physiological fact that the lower tones of a higher register are never as powerful in resonance and volume as the same tones produced in a lower register. The four tones in medium register at *a* are therefore weaker than if produced in the chest register; the same condition is present at *b*, *c*, *d*, and *e*. In order to obtain a uniform tone quality and volume throughout the whole vocal range, the series of tones at *a*, *b*, *c*, *d*, and *e* should be cultivated in two registers. The mode of producing the different changes in the proportions of the larynx cavity must be well conceived by the singer; that is, he must become conscious of producing the change in the larynx. In this the singer as well as the teacher must be guided, at the start,

by the ear, recognizing the tone as produced in the chest, medium, head or falsetto register. The ear is therefore the judge, and will continue to remain so, even when the singer, by practice, has acquired the muscular memory (see 9), mentally guiding the change of larynx proportions.

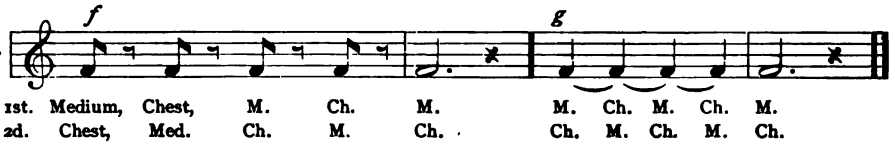
D. The proper position of the larynx cavity necessary for a full and pure quality of the tones produced in two different registers can be obtained only by careful, painstaking exercises. The two essential phases of such exercises are: facility of muscular action in changing the cup form from one position to another, and muscular strength to establish and maintain the position of the larynx cavity. It therefore requires muscular flexibility combined with muscular strength, two conditions rarely found in one vocal organ.

A practical exercise for acquiring muscular flexibility in the change of registers consists in singing on one vowel a tone of the same pitch alternately in both registers, first, by separating each by a pause, as at *f*, and then without a pause, as at *g*.

undertaken. This consists in singing the series of tones in one register, as at *h*, and then in the other, as at *i*, with the object of improving and harmonizing the tones of each register, so as to obtain a uniformity of volume and quality.

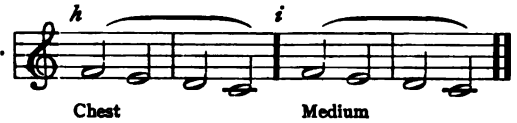
The exercise at *h* and *i* should be continued until this uniformity in quality, volume and resonance is obtained. The same exercises presented in Exp. 25, 26, should also be applied to the other series of tones at *b*, *c*, *d*, and *e*. It will be impossible in some voices to procure a uniform type of vocal tone in both registers. One or the other will be apt to be more prominent in volume or tone power. This phase of the two registers has its artistic value, in that the more powerful tones are used for powerful phrases, while the more subdued tones in another register are suited for subdued and softer phrases. (30, C.) This exchange of registers is of the greatest importance in the production of the swell tone, or *messa di voce*, as the Italians term it (47); in that the crescendo and decrescendo on one of these tones could not

EXCHANGE OF REGISTERS

Exp. 25.

The exercise at *f* should be continued until the pupil obtains an idea of the muscular action producing the change of registers, before attempting the exercise at *g*.

After the pupil has become familiar with the action of the larynx muscles producing the change of registers, the exercise for acquiring muscular strength should be

be obtained without a change of register. Furthermore, attention is called to Sect. 36, concerning the break of the voice, which is apt to occur on these overlapping tones. The most effective exercise for safeguarding a steady muscular function — which reduces the danger of a break on the tones produced in two registers — is embodied

Exp. 26.

in exercise *d* and *e*, Exp. 21, as these exercises, with those of this section, at *f*, *g*, serve to strengthen the muscles and steady the breath as well.

Note. The fact must be emphasized in this connection that no amount of technical information and well-directed exercises will ever suffice to develop a vocal artist if the singer has not the mind, heart, and soul of the artist, an enthusiasm for his art, and the willingness to make sacrifices for the same.

No art development is possible merely by cold calculation. Without a well-balanced mental control of his physical forces, combined with a sense for beauty and poetry, and a lively emotion, stimulated by imagination,—the singer will remain an automaton. These human phases or elements of an artist's personality are inborn; they are the invaluable gifts of heaven, and cannot be inculcated. They must be part of the individual, and can be developed, if he is in possession of these divine elements. But without them the best efforts in voice culture of the able teacher, as well as those of the singer, will be but half realized.

PART V.

Flexibility.

43. Flexibility. — The term "flexibility" is not to be confused with "agility." The two words have a distinct meaning in vocal training. Flexibility refers to the pliability or suppleness of the muscles of the vocal organ as a whole, while agility has reference to the celerity or nimbleness of vocal delivery of florid music. Flexibility consists therefore in the free, easy, and independent action of every separate part of the vocal organ active in the production of various qualities of tone, the registers, dynamic shading, correct breathing, tone emission, attack, delivery of vowels, speech, etc. Muscular flexibility is more or less a constitutional endowment, which demonstrates itself in a general muscular independence of every part of the body. In fact, this general bodily flexibility is indicative of the possibility of vocal flexibility. Where the former is absent the latter is not apt to make its appearance without proper training. For no singer can expect to become the possessor of a flexible vocal organ unless nature endows him with such, or he improve his shortcomings by personal efforts. A singer may be able to execute a simple song, and yet be unable to sing a simple scale passage. He may be able to deliver a dramatic aria, and yet be incapable of producing a legato phrase. He may acquire the reputation of having a fine voice, and yet be deficient in every phase of the singer's art, which only a flexible vocal organ properly trained can supply.

44. Dynamic Shading. — Dynamic shading is concerned with the production of the various degrees of tone power possible between a very loud tone and a very soft tone. The five degrees of tone power are indicated by the terms: fortissimo — *ff*; forte — *f*; mezzo forte — *mf*; piano — *p*; and pianissimo — *pp*.

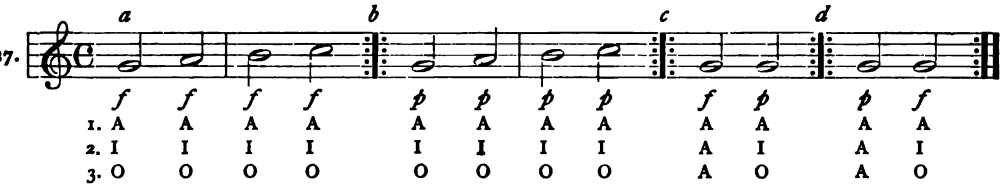
The difference between tone power and tone volume (Sect. 40) must be well understood, to avoid confusion.

The emission of a tone in the various degrees of dynamic shading depends on the ability of the singer to control the pressure and volume of breath, and to establish the proper proportions of the tube of the trachea, and the cavities of the larynx. For an easy control of the diaphragm muscles and the flexibility of the pocket bands (Fig. 6, *d*, *d*) are essentials in producing the dynamic shadings of vocal tone.

A. The first effort at tone shading should consist in acquiring the ability to sing a tone in a powerful forte, and its reverse, a sonorous piano, before an attempt be made to produce a crescendo and decrescendo. The normal vowel A establishes the normal pharynx pose (Sect. 3, 4), which is of great moment in obtaining an easy control and correct form of the upper resonance tube. In many cases the closed Italian vowel I produces a more favorable pharynx pose for the shading of a high tone than the vowel A, and for a lower tone the vowel O is — for some voices — better suited. The pupil must, by his own experience, find the vowel best adapted for dynamic shading of high or low tones. The following exercises should be practiced until a good resonant forte is acquired, as well as

a good carrying quality of subdued tone. The four tones from G to C, at *a*, are best suited for sopranos, altos and tenors, on which to exercise the dynamic shading, as the change of registers is not apt to occur (see. 40, A).

acquisition of a pure, clear, and brilliant quality of vocal tone is the chief object in cultivating the various dynamic shadings. Attention is called to the remark in 40, *Note*, concerning the mezza voce. A ringing, brilliant quality of tone is impossible

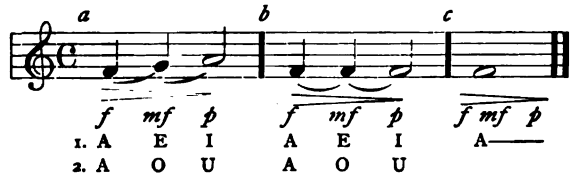
Exp. 27.

B. The tones of the vocal register capable of being produced in two registers (42) present great difficulty in applying dynamic shading, in that the production of a forte and piano on one of these tones *in one register* is a task few singers are able to achieve. For in singing piano the larynx proportion is apt to change from the form assumed for the production of the forte, and in singing forte the larynx cavity is inclined to change to a more favorable position for the emission of a soft tone. If the tone in two registers is of an even quality and volume, this change of registers is not objectionable; but if the tone quality and volume vary with the change of registers, the result is inartistic. Unless it is justified by dramatic delivery this mode of producing dynamic shading should not be cultivated under these conditions. Exercises 17, 18 may be studied in singing each tone *f* and *p*.

Note. It must be kept in mind that the throughout the whole vocal compass without independence and flexibility of every muscular action of the whole vocal organ (Sect. 2).

45. **Decrescendo** — The decrescendo, or decrease by degrees of the dynamic power of a tone, is indicated by two approaching lines, viz.: . In its execution there occurs a decrease in the tone power and pressure of the breath, as also a decrease in the expansion of the larynx cavity. These two functions coöperate in the production of an artistic decrescendo as well as the crescendo. As it is easier for a vocalist to relax than to produce the muscular tension, it is more practical therefore to begin with the decrescendo.

A. A practical demonstration of a decrescendo can be best obtained by a series of successive tones on different vowels, as at *a*, before it is practiced on a single tone, at *b*, and a single vowel, at *c*. The first exercises should be confined to

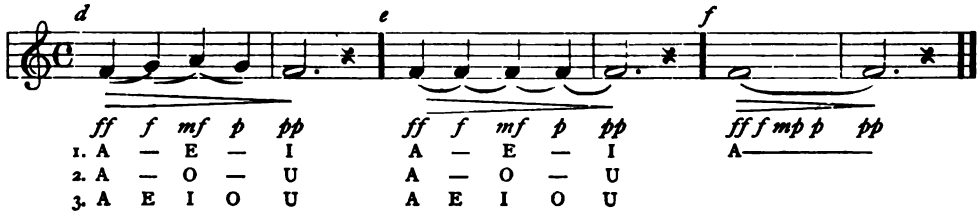
THE DECRESCENDO

Exp. 28.

the three intermediate dynamic degrees — *f*, *mf*, and *p* — produced in one register.

B. If the pupil have the capacity for producing a greater degree of dynamic power, the exercise can be extended to include the five dynamic degrees on five successive tones combined with different vowels at *d*, on one tone at *e*, and one vowel at *f* — in one register. The vowel A favors the *ff* tone production, on account of its open pharynx position, while the vowel *U* favors the emission, of the *pp*, particularly in male voices.

condition of the vocal organ, of which the singer must have a perfect knowledge, as to the degree of power he is able to produce on the overlapping tones, so that the change from one register to another is made to obtain the best possible decrease or increase of tone power, combined with a good quality of tone. The first exercises should be begun with the three intermediate dynamic degrees, as at *g*, *h*, *i*. If the production of the low tone *D*, at *g*, in the chest register is too difficult to obtain in *p*, the example at *k* is less so.

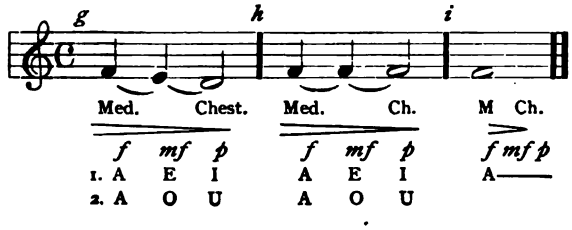
Exp. 29.



C. The cultivation of the decrescendo in *two different registers* should be the last to be undertaken, as it is the most difficult to execute, and is the final phase of artistic vocal culture. If this is begun before the vocal organ is well prepared in the production of

The example at *g* is intended to demonstrate the nature of the change from the medium to the chest register on a lower and more convenient tone, which serves as an example for the change of register at *h* and *i* on one tone.

Exp. 30.



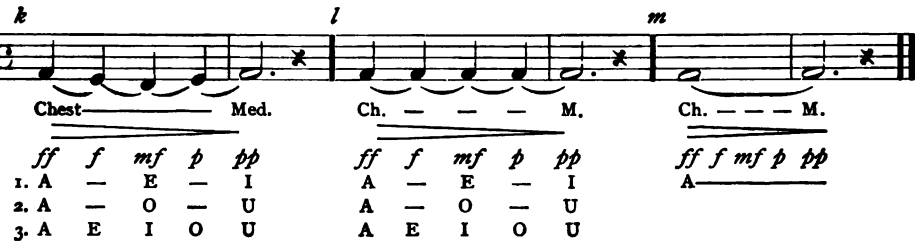
the sustained tone, the legato, quality, and volume of tone, and the correct use of the registers, the singer will never acquire an artistic swell tone. For the artistic execution of the decrescendo and crescendo depends on the proper physical

D. In the following examples (Exp. 31) the five dynamic degrees of tone power are exercised in conjunction with the change of register. Whether the change of register should take place on the beat here indicated, or a beat sooner or later, must be decided

by the nature of the pupil's ability to produce the desired tone quality, volume and resonance.

In the production of the crescendo the action of the diaphragm is of the utmost importance, in that by its mus-

Exp. 31.

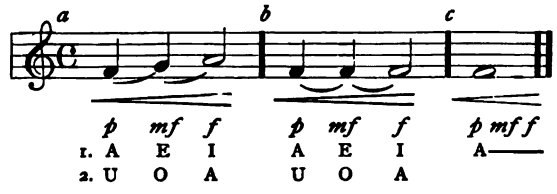


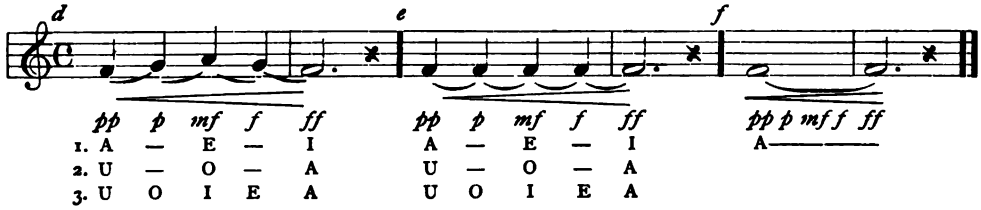
Note. The example of exercises here given should be applied to every tone in the compass of each voice (Ex. 17, 18). The change of registers should be studied on the series of tones produced in two registers, presented in Sect. 42, *a*, *b*, *c*, *d*, *e*. The greatest difficulty for beginners will be found in the tendency to relax the muscular tension too abruptly, so that the pupil is unable to produce a gradual decrescendo. To overcome this tendency it is advisable to continue the practice on the three dynamic degrees — *f*, *mf*, *p* — until the pupil is able to increase the three degrees to *ff*, *mf*, *pp* before practicing the exercises in the five dynamic degrees. What was said concerning muscular indolency in Sect. 39, C, must be applied here. Exercises 17, 18 may be sung with the decrescendo.

46. Crescendo. — The execution of the crescendo on one tone requires a reverse muscular function from that necessary to produce the decrescendo. In the latter the muscles gradually relax, while in the crescendo the muscular tension gradually increases.

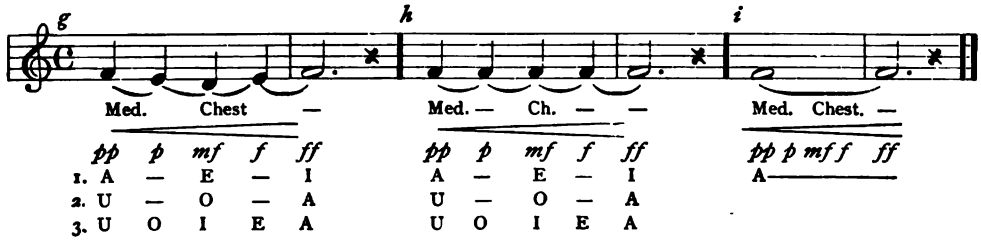
cular contraction the breath current is proportionately increased to produce an increase in tone power. In conjunction with this action of the diaphragm the muscles of the inner larynx must maintain a firm and steady position of the cup cavity, so that the established form of the cup — which produces the pitch of the tone to be increased in power — is not disturbed by the increased breath current expelled by the action of the diaphragm, and result in changing the pitch.

A. It is best to begin the exercises in the crescendo by the use of the three intermediate dynamic degrees — *p*, *mf*, *f* — in the manner presented in the preceding section, by executing the crescendo first on three successive tones, with different vowels, as at *a;* and then on one tone, at *b;* and on one tone with one vowel at *c* — without a change of register. The vowel A being more suited for the production of tone power, must also be exercised in the more subdued degrees.

Exp. 32.

B. The production of the five dynamic degrees should succeed the preceding, also without change of registers, at *d*, *e*, *f*.

Exp. 33.

C. In exercising the five dynamic degrees in conjunction with a change of register — Exp. 34, at *g*, *h*, *i* — the advice given in 44, B, is also applicable here. The tone is begun in the medium register *pp* and changes to the chest register.

Exp. 34.



Note. The execution of a crescendo with the aid of two registers has its difficulties, particularly so where the more powerful tones of a lower register change to the lower tones of the higher register, which are naturally weaker in tone power (42, C). In addition to this a further difficulty is encountered by the possibility of a break of the voice on these tones (see 36). The use of two registers in the production of a crescendo, as well as the decrescendo, consequently requires the careful consideration of various physical conditions, if the voice is to be well trained for artistic purposes. Exercises 17, 18 may be practiced with the crescendo.

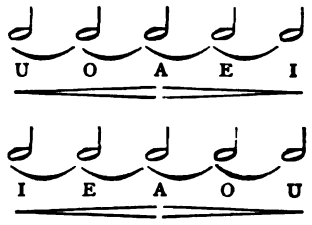
47. Swell Tone. — The swell tone, or *messa di voce*, as the Italians term it, designates a crescendo followed by a decrescendo on one tone, emitted in one breath; as the sign indicates The execution of the swell tone is the criterion of artistic voice culture. For it is the most difficult phase of the singer's art, in that it requires an absolute control of every muscular function of the vocal organ, combined with judgment, a good musical ear, and a cultivated taste. The main features in the production of the swell tone have been explained in the preceding sections 45, 46. Its two phases — the crescendo and decrescendo — require the fullest breath supply, and judicious management of the same. The singer must be able to calculate the amount of breath needed for the crescendo, so that enough is retained to produce a well-proportioned decrescendo. This requires long and careful practice, before the vocalist obtains control of the breath and proper management of the muscular functions active in the production of the swell tone.

A. The swell tone in one register may be best obtained on the particular tones which are not produced in two registers. (Exercise 65.)

B. The swell tone in two registers can be executed only on the tones

of each voice which are produced in two registers. The more or less favorable conditions in the production of these tones — mention of which has been made in the preceding sections — operate and influence the artistic execution of the swell tone.

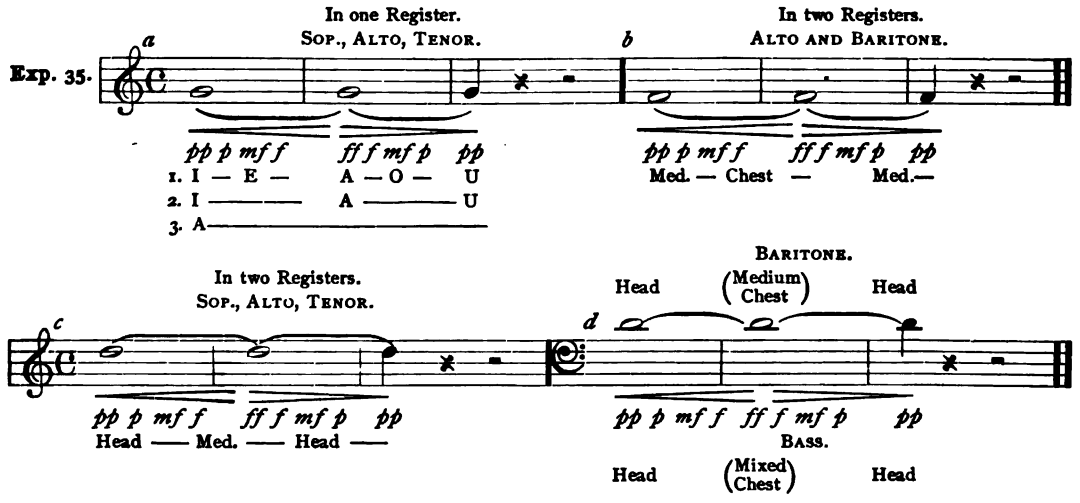
C. The change of registers in the production of the swell tone is a question of individual capacity. No rules can be given applicable to every voice on which dynamic degree the registers should be changed. The singer must acquire this knowledge by personal experience and judgment. It is advisable, perhaps, to begin the swell tone with the aid of vowels, as these establish a more or less favorable pharynx pose. The normal vowel A is naturally more favorable to the emission of a *f* or *ff* than the closed or more open vowels. The closed vowels are suited for *p* and *pp* in female voices, and the open vowels U and O for *p* and *pp* in male voices. Between these three extreme vowels — U, A, I — are placed the more intermediate vowels O and E. So that the five vowels in the following order would be an aid in producing the swell tone; viz.:



If the pupil finds it troublesome to produce the swell tone on one vowel, he may begin with the five vowels, as at *a*, 1; then the three vowels, at *a*, 2; and finally on one vowel, at *a*, 3.

THE SWELL TONE

Exp. 35.


In one Register.
SOP., ALTO, TENOR.
In two Registers.
ALTO AND BARITONE.
a
b
pp p mf f ff f mf p pp
1. I — E — A — O — U
2. I A U
3. A
pp p mf f ff f mf p pp
Med. — Chest — Med.—
In two Registers.
SOP., ALTO, TENOR.
BARITONE.
Head (Medium Chest) Head
c
d
pp p mf f ff f mf p pp
Head — Med. — Head —
pp p mf f ff f mf p pp
BASS.
Head (Mixed Chest) Head

The tone G, at *a*, is above the chest register, except in the case of contraltos who are capable of producing this tone also in the chest register. Such voices would therefore have more difficulty in producing the swell tone in the medium register only. At *b* the tone F is produced in the medium and chest register. The change can take place on the *f* or *mf*, but must be obtained without a noticeable change of quality and volume. At *c* the change is made from head to medium on the tone D in sopranos, altos, and tenors. The change in the tone D, at *d*, is made

in baritones from the head to the medium or chest register, and in basses from the head to the mixed or chest. (Exercises 65 to 72.)

48. Raddoppiate. — The *note raddoppiate* is concerned with the repetition, with a soft breath attack, of a tone of the same pitch in one breath on one vowel. It is the model mode of attack admitted in the legato style of delivery, which excludes the staccato, marcato and martellato, as being too sharp, precise and emphatic for the smooth and sustained legato.

A. In the rendition of the raddoppiate the tones should be repeated or attacked without a pause between them. This can be obtained by the use of a slight aspirate H (see 14), sounded before each attack, as at *b*, Exp. 36. The sounding of the aspirate should, however, be diminished by degrees, so that the soft attack can be produced without the aid of the consonant H, on one vowel.

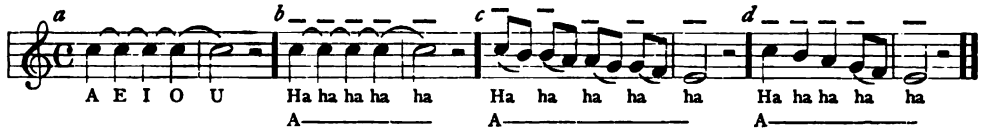
B. The nature of this soft legato attack is best exemplified by singing on one sustained tone the five Italian vowels, as at *a*, which produce a slight emphasis by the change of the tongue in enunciating the five different vowels. This slight emphasis is sufficient for the legato attack as intended by the note raddoppiate, at *c*, and in the execution of the legato attack in a series of scale tones in the phrase, at *d*, on the vowel A.

C. The well-controlled retention of a sufficient amount of breath (see 10), and an even pressure of the diaphragm (Fig. 5, *y*) in expelling the same, are important factors in executing the legato attack.

Note. In Sects. 11, 12 and 14, the various modes of vowel attack have been enumerated. In this section distinction is made between a sharp glottis attack and the soft attack with the glottis almost open. The vowel attack at *a* is intended merely to serve as a model, or example, as also the examples at *b*, *c*, and *d*, with the aspirate H. The main object is to have the pupil conceive and execute the soft legato attack, without these aids. It must be understood that the tone must be well sustained in the legato attack, which is indicated by a dash or short line over each note — as at *b*, *c*, *d* — on the vowel A, without the H. (Exercises 73, 74.)

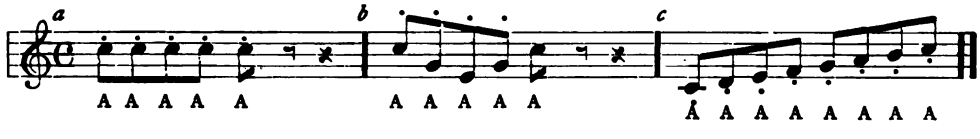
LEGATO ATTACK

Exp. 36.



49. Staccato. — The Italian word "staccato" designates a mode of vocal delivery the reverse of the legato in manner of production and execution. The staccato is a very sharp, short tone produced by the click of the glottis (20). The manner of producing this staccato attack can be of two kinds: either harsh, stiff and dry; or soft and flexible, without sacrificing precision and clearness. The difference between these two phases of attack can be compared to the articulation of the two consonants *t* and *d*, or *p* and *b*. The one

THE STACCATO

Exp. 37.

is sharp, harsh, and explosive, and the other soft and rounded. The softer of the two staccato attacks is more desirable. The sharp attack produces a dry, hard, metallic tone, while in the softer attack the tone is more mellow, resonant and flutelike.

A. In the production of the staccato tones the breath is expelled in short puffs, by a slight action of the diaphragm, thereby forcing the closed lips of the glottis (Fig. 6, *u*) to open and close. The manner of forcing the lips to open is conditioned by the nature of the muscular control and force of the breath current. The proper manipulation of the diaphragm and glottis muscles is therefore responsible for the quality of the staccato delivery.

B. The muscles of the inner larynx — particularly of the pocket bands (Fig. 6, *d*, *d*), which control the production of the pitch of the tone — must be firmly and steadily maintained to assure the pitch and quality, while the muscles of the diaphragm (Fig. 5, *y*) and glottis (Fig. 6, *u*) are active in the production of the staccato. Hence the staccato requires the cultivation of muscular independence and proper breath control. A deficiency in either direction would interfere with the musical quality of the staccato tone.

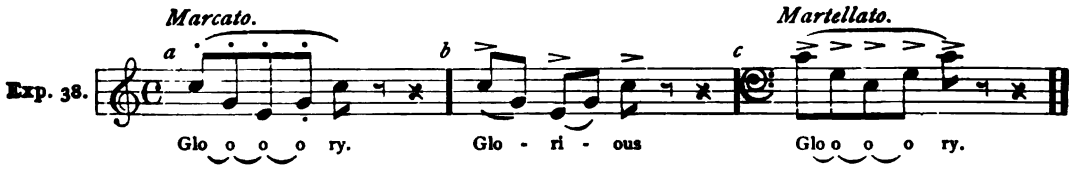
The staccato is indicated by dots over the notes, as at *a*, *b*, and *c*, Exp. 37. The attack is produced with the normal vowel A.

Note. In the rendition of staccato phrases and scale passages, as at *b* and *c*, the position of the larynx and pharynx must be steady and firm, but not rigid. The singer must experience a feeling of ease in the management of the whole vocal organ, so that no evidence of effort is visible during the execution even in the most difficult vocal passage (9). It would be profitable for singers to observe the grace and ease of singing birds during their delivery of most astonishingly long trills and staccato groups; to notice the ease of motion during singing, although their little throat swells, and their whole body seems active in delivering their message of joy. (Exercises 75, 76, 77, 78.)

50. Marcato. — The Italian word "marcato" means to mark, or emphasize the tone. The marcato is executed on the vowel of a word or syllable by a slight action of the diaphragm producing a reinforcement of the breath current which gives the tone its emphasis, or marcato character, without the use of the aspirate H.

A. The marcato in female voices is more precise and distinct than in men's voices. This difference is indicated by dots over the notes with a slur over the number of notes to be sung on one vowel or syllable, as at *a*. If a tone begins with a vowel or consonant, the marcato is indicated by the customary marcato sign, as at *b*.

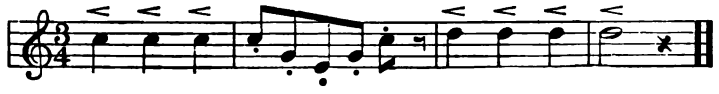
B. The marcato in male voices — particularly basses — is of a more heavy and clumsy nature than that in female voices. The larger proportion of the male vocal tube requires a greater volume of breath, which naturally produces a heavier marcato.

This kind of vocal attack is called "martellato," and is indicated by the marcato sign > under a curved line (at *c*). The word "martellato" means to hammer, signifying a hammered kind of delivery.

Note. A full supply of breath is needed more in the production of the marcato and martellato than in the staccato, as in the former two modes of delivery the glottis is open, while in the latter the glottis closes after each staccato tone. The breath supply is therefore sooner exhausted in the case of the marcato and martellato than in the staccato delivery. The firm but mobile action of the diaphragm is essential to the production of these three modes of delivery. (Exercises 75 to 80.)

51. **Note Flautate** is an Italian term indicating a slight crescendo on repeated tones. This is obtained by the action of the diaphragm somewhat similar to the martellato, except that the tone is softly attacked and then slightly increased in power by the breath pressure. This is indicated by a reversed marcato sign < < < placed over the notes (Exercise 81.)

The note flautate is more effective for high than low voices, and is found almost exclusively in florid music.

FLAUTATE.

Exp. 39.

PART VI.

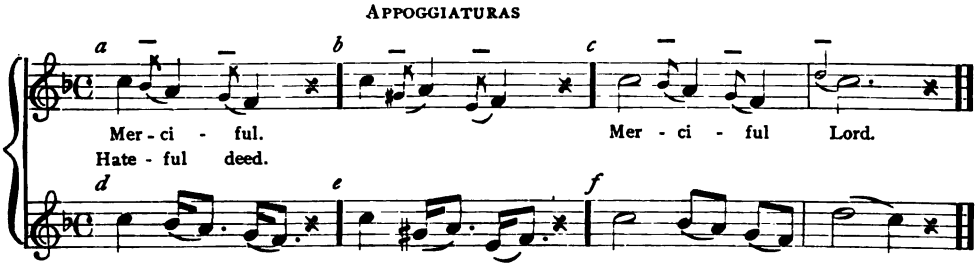
Embellishments.

52. Florid Style. — The florid or embellished style of vocal music is so called on account of the employment of every phase of vocal agility the human voice is capable of executing. It presents an excess of runs, turns, trills, grace notes, staccatos, and passages of speed in preference to simplicity of melody. Every vocal dexterity is justified in the florid style, if the singer has acquired the artistic training to execute it. This is not the province of every singer, for very few singers have the natural qualifications necessary for the execution of florid music. Those that have are rarely sufficiently trained to do justice to this style of composition. The mere fact of having the temerity to sing a florid aria does not entitle the singer to critical consideration. The execution of a florid composition should not be undertaken by any one unless his vocal organ is cultivated to the highest degree of perfection, without any shortcomings in any direction. For in this style of music it is more the perfect training of the vocal organ and the brilliant manner of vocal delivery than the presentation of emotions that constitute its artistic value. In fact, brilliancy, dexterity, and lightness characterize the florid style.

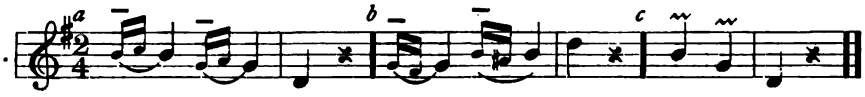
The human vocal organ of some gifted mortals is capable of as great a development in the execution of florid music as can be obtained on some mechanical instruments, the flute, for instance. The present age is, however, not as interested in this type of vocal compositions as was the case in Italy at the beginning of the last century. The dramatic, pathetic, and emotional in music is at present far more in favor than the florid type. In the following sections the essential phases of embellishments presented are: the *appoggiatura*, the *mordent*, the *turn*, the *trill*, the *acciaccatura*, the *glide*, and *anticipation*.

53. Grace notes are such that embellish the melody, and appear in conjunction with the principal notes to add grace and charm to the simple vocal style. Among the grace notes are found single notes and groups of two, three, four and more notes, which are usually indicated by small notes.

A. The *appoggiatura* is a single grace note, which — as the word signifies — leans towards a principal note. It always appears one diatonic degree above a principal note, at *a;* or a semitone — chromatic or diatonic — below, at *b;* and is connected with it by a slur, at *a*, *b*, *c*. The appoggiaturas — like other grace notes —

Exp. 40.

are indicated by small notes which have no representation of time value in the measure, but which nevertheless receive the value they represent by deducting this from that of the principal note following — *d*, *e*, *f*. There are two kinds of appoggiaturas: the long and the short. The short is indicated by a line through the stem of the note, at *a*, *b*. The value of the long is indicated by the small note, at *c*. The appoggiatura receives the accent of the principal note. The character of the melody conditions the nature of the attack of the accented appoggiatura. On the word "merciful" it has a soft legato attack, and on the phrase "hateful deed" it would naturally be more a decided marcato attack. On the upper staff the appoggiaturas are given as printed, and on the second as executed (see Exercise 82).

THE MORDENT

Exp. 41.

B. The *mordent* is formed of two adjoining notes of a scale of which the first is the principal note and the second the alternating or changing note a degree above — Exp. 41, *a;* or below, at *b;* which in returning to the first constitute the three notes of the mordent, or recoil trill. The mordent has two forms: to the alternating tone upward, at *a;* or downward, at *b;* indicated by the sign ∾ placed over a note, at *c*. It is always slurred to the principal note, and must be accented as the principal would be. It is executed quickly, like a short trill. (Exercises 87, 88.)

C. The *turn*, like the mordent, forms the alternating tone above and below with the principal tone combined into groups of three, four, or five tones. The turn may begin with the principal or alternating tone, but always ends with the principal. Hence there are three groups of the turn, each having two forms, depending on the direction of the turn to the alternating tone above or below; viz.:

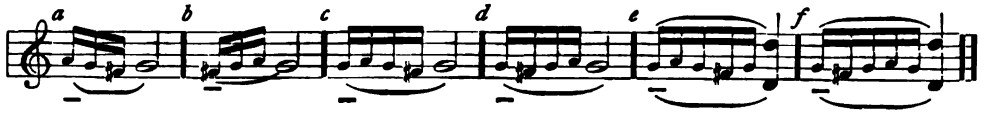
Three-tone group: beginning with the alternating tone above — Exp. 42, *a;* or below, *b*.

Four-tone group: beginning with the principal followed by the alternating tone above, *c;* or below, *d*.

Five-tone group: beginning and ending with the principal — alternating tone above, *e;* or below, *f*.

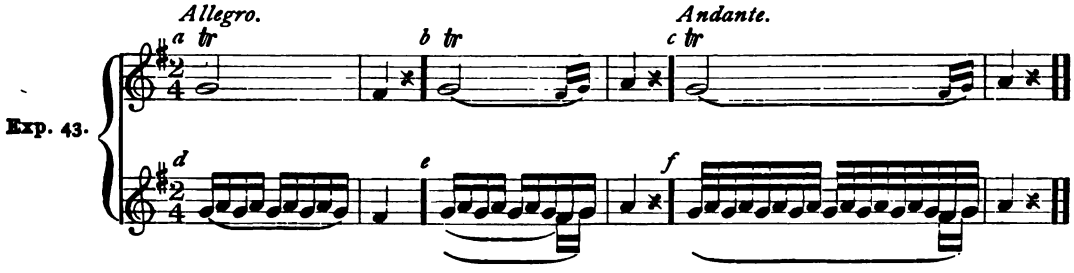
The turn must always be closely connected with the principal, so as to form a well-balanced melodious legato phrase. The accent is placed on the first tone of the turn, whether it is before a long note, or after it. The turn is produced by the muscular action of the inner larynx, particularly the pocket bands; the breath pressure remains even and steady (37). The exercise of the turn is an excellent preparatory for the study of the trill; as it strengthens the muscles in the production of the alternating tones above and below, and at the same time develops flexibility. In acquiring the legato style it is very important. (Exercises 83, 84, 85.)

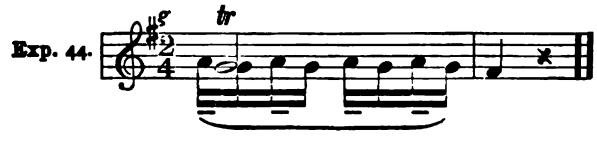
THE TURN

Exp. 42.

D. The *trill*, or shake, consists in the rapid repetition of a tone and its diatonic alternating tone above; the two being executed in equal values in rapid succession, according to the character and speed of the composition. The trill always begins with the principal tone, unless otherwise indicated; and is marked by the first two letters of the word — tr — being placed above the note (Exp. 43, *a*, *b*, *c*). The execution must be in strict time.

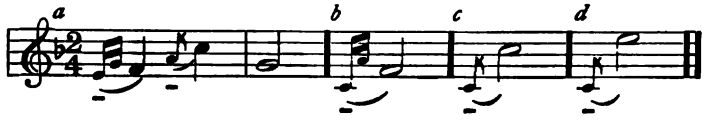
regular turn, which enhances the melodic grace of the trill, as at *e*, *f*.

Note. The trill is produced by the action of the muscles of the pocket bands (Fig. 6, *d*, *d*), not by any influence of the breath current, which must be even, steady, and well controlled by the diaphragm. The trill, according to Garcia, is produced "by a very loose and swift oscillation of the larynx." This description is extremely indefinite. If any singer were to attempt to execute a trill with a loose and wabbly

THE TRILL

The difference in the speed of the *allegro* and *andante* makes the increase in the number of repetitions of the trill necessary. At *a* it is repeated four times in the full measure; and at *c* eight times in the measure. The return to the last principal tone in the first measure (at *d*) makes it necessary to deliver five sixteenths instead of four. By this return to the last principal tone the trill establishes an uninterrupted connection with the first tone of the next bar, which produces a good ending of the trill. To secure this good ending of a trill, the alternating tone below is frequently added at the end of a trill, as at *b*, *c*. By this addition the last five tones of the trill establish a

larynx he would become aware that it would be impossible to produce a trill with precision. It is true that the muscles of the pocket bands must be limber and flexible, but the larynx as a whole (Fig. 7) must be steady and firmly controlled during the execution of a trill. The second tone of the trill being higher, it requires more muscular strength to produce it. By beginning the study of the trill with the tone above — or upper alternating tone — in the nature of an appoggiatura (Exp. 44, *g*), the muscles become more strengthened and the trill more even in execution, if the upper tone is slightly emphasized, as in the following. (Exercises 86, 89, 90.)

E. The *acciaccatura*, Exp. 45, is a grace note, or a group of notes, which — as the word signifies — is crushed into the principal tone, or is compressed with it. It differs from the appoggiatura, mordent, and turn, in that it may embrace notes placed at a distance from the principal. The first tone of the acciaccatura receives the accent. (Exercise 91.)

ACCIACCATURAS

Exp. 45.

F. The *glide* (German "Schleifer") consists of a succession of diatonic scale tones quickly executed, preceding a principal tone, to which it is slurred. The muscles, for each tone must be distinctly produced as if delivered by a flute, or as a glissando on a piano. The study of the glide is enhanced by beginning with a group of two or three successive scale tones, and increasing the number until a whole scale can be executed in this manner, as at *c*. (Exercise 92.)

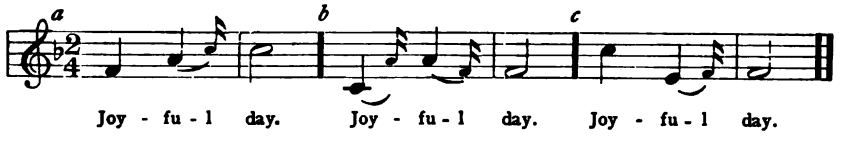
G. The *anticipation* is a short tone of the same pitch as that of the following principal tone; the latter, being sounded slightly in advance of its place in the measure, is anticipated by the shorter

THE GLIDE

Exp. 46.

glide differs from the other grace notes in that the accent is placed on the principal, and not on the first tone of the glide (Exp. 46, *a*, *b*, *c*), so that the time tone preceding it. The anticipation is produced on the last vowel preceding that of the principal tone following; viz.:

ANTICIPATION

Exp. 47.

value required for its production is taken from the preceding note, not the following. It is rarely used in conjunction with text, but found more in florid music.

The artistic execution of the glide demands a perfect control of the larynx

The use of the anticipation can easily be abused, and turn to a faulty delivery, making it impossible for the singer to produce a tone with a clear legato attack. It should therefore be used with artistic judgment, and be confined to its connection with the portamento (39), where

it is justified as an artistic factor. (Exercise 93.)

54. Arpeggios are broken chords, obtained by sounding the three or four single notes of a triad and sept chord in succession in an upward or downward direction. There are three forms, or positions, of arpeggios in a triad, and four in a sept chord; viz.:

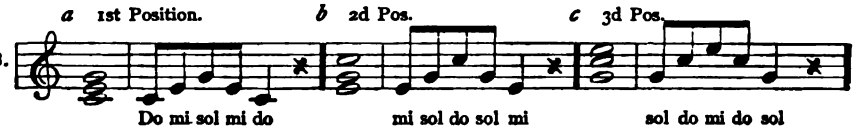
Arpeggios of a triad:

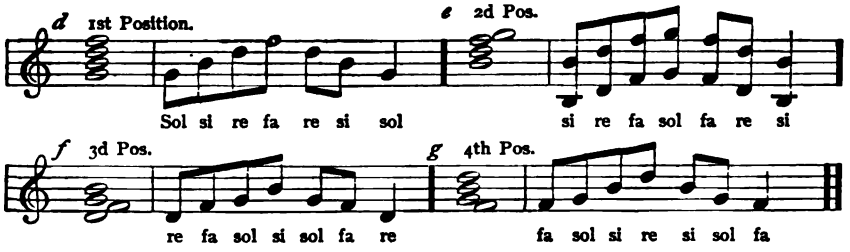
1st position — do, mi, sol, Exp. 48, *a;*
2d position — mi, sol, do, Exp. 48, *b;*
3d position — sol, do, mi, Exp. 48, *c.*

Arpeggios of a sept chord:

1st position — sol, si, re, fa, at *d;*
2d position — si, re, fa, sol, at *e;*
3d position — re, fa, sol, si, at *f;*
4th position — fa, sol, si, re, at *g.*

ARPEGGIOS OF TRIAD

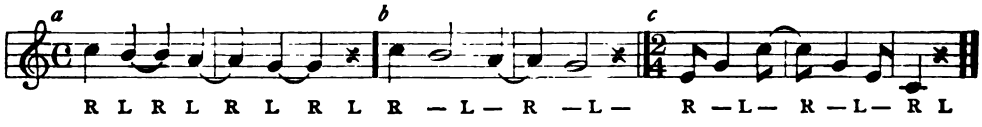
Exp. 48.

ARPEGGIOS OF A SEPT CHORD



three and four tones. The degrees of shading may be manifold, and increase the difficulty in obtaining a uniform tone quality. Hence the study of arpeggios in conjunction with the various phases of delivery and shading is a safe medium for acquiring a perfect control of the vocal organ for the execution of the florid style. (Exercises 96 to 104.)

55. Syncopation consists in prolonging a tone on *an unaccented part* of a measure so as to carry it over to include the tone of the same pitch on the following accented part of the measure, thereby producing the syncopation, or tying, of the accented tone to the one preceding. The regular accent of the measure is thereby obliterated and is shifted to the preceding tone, producing an artificial accent, as is demonstrated in the following:

SYNCOPATION

Exp. 49.

The arpeggios may be delivered in various manners — staccato, legato, marcato, etc. The chief object is the acquisition of an even tone quality in the delivery of the

The difficulty in the execution of the syncopation is not of a vocal but a rhythmical nature, due to the artificial accent. For most beginners it is not an easy matter

to sing syncopated phrases (Exp. 49, *a*, *b*, *c*), and yet be conscious of the regular accent, which is not emphasized by the voice. The best method to acquire the execution of the syncopation is to step off the time — as indicated by the letters R L, for the right and left foot — and sing the example while marking the time by the step. The example at *a* has four steps, and that at *b* but two, like that at *c*. (Exercise 105.)

56. The Echo effect is produced by a contrast in the dynamic shading. The first, or loud vocal phrase is reproduced in a softer piano imitation, suggesting an echo. This requires either a change of register, or a greatly diminished degree of tone power in the same register. Both phases of tone delivery require artistic vocal culture. Hence it would be useless for any singer to attempt the echo effect without the proper training. For further details on these two phases connected with the execution of the echo, see Sects. 42 and 44.

Note. Another artistic phase of vocal delivery depending on the breath management is presented in the production of the sobbing effect in certain emotional dramatic compositions. It is obtained by an abrupt action of the diaphragm in cutting off the vocal tone by a quick inhalation or expulsion of the breath, which is characteristic of sobbing and gasping.

57. The Tempo Rubato consists in a slight prolongation or freer delivery of the time values of the notes of a phrase or section of a melody, without distorting the rhythmical proportions and proper accents of the measure.

The *Rallentando* is a gradual reduction of the speed of a melodic phrase, usually found at the end of a division of the composition, or a section of the melody.

The *Hold*, or fermata, is a pause indefinitely sustained on a note or rest, beyond the value of the note or rest presented in the measure.

58. Phrasing is the art of delivering the phrases, sections and divisions of a melody by producing the proper arsis and thesis, or rise and fall of the melodic sentences in a logical, musical and artistic manner. This is obtained in a vocal composition almost exclusively by breathing in the proper places, and otherwise manipulating the breathing and tone shading, so as to produce intelligent delivery. Artistic phrasing requires technical knowledge of musical composition on the part of the singer. He must be able to conceive the beginning and end of a phrase before he can present the correct delivery. For a musical phrase may begin on any beat or division of a measure, and the breathing place must conform to the musical phrase. In many vocal compositions the musical phrase does not conform to the metrical division of the verse. This neglect on the part of the composer makes it most difficult for the singer to conform the musical to the metrical phrase, or vice versa. Hence technical knowledge of composition alone can guide the singer in this case; he has to use his judgment to avoid as much as possible breaking a vocal phrase by breathing in the wrong place. For a long phrase, a deep inhalation is necessary; and for a short phrase, a short, quick catch breath will suffice. The breathing should never be noticeable.

59. Cadenza. — A cadenza is an unaccompanied musical phrase or section of a composition which is rendered with an absolute freedom from the metrical divisions of the prescribed time measure. It serves the singer to emphasize any particular capacity in the style of delivery — florid, lyric or dramatic — in that in the cadenza he presents the best side of his

voice, unhampered by the rhythmical division and accompaniment. In a short cadenza the value of the notes may be arranged to conform to the regular measure, but in a long and florid cadenza this is not observed. Any number and value of notes may be presented without reference to the time value of the measure; yet the relative value of the notes must be indicated, and the phrases rendered accordingly by observing the proper breathing place.

60. **Recitativo.** — The recitativo consists in a musical declamation of the text in such a manner as to imitate dramatic speech. Hence it is sung without reference to the measural divisions, chiefly observing the rhetorical accents to bring out the dramatic meaning of the words. The recitativo must be delivered therefore in accordance with the lyric and dramatic content of the text; the meaning of the words must be musically presented without sacrificing the vocalist's art. This style of vocal declamation is much more in vogue in modern compositions than in the older. Even in simple songs the dramatic expression is emphasized. In fact, the dramatic style is essential nowadays in both branches of music — vocal and instrumental. The study of the recitativo style develops the dramatic instinct, and is consequently an important factor in a singer's training. He should be guarded, however, not to lose sight of beauty of tone production and the legato style in his effort to acquire dramatic declamation and expression.

EXERCISES.

Elementary Course.

Remarks on Exercises in Part I.

a. Assume the ready pose before starting an exercise, and maintain the same throughout each exercise (see Sect. 9).

b. Take time for breathing, but aim to sing the exercises in time by taking short, quick and deep breaths through the nose, where the sign (❜) indicates the breathing place, but do not relax the muscles active in assuming the ready pose, while taking breath in an exercise, nor make the breathing noticeable. Artistic breathing must be done without apparent effort. (Sect. 3, *Note*).

c. Sing the exercises 1 to 4 until the proper vowel is found which establishes the most convenient and effective pharynx pose required for the production of a model tone. (Sects. 2, 4.)

d. Begin the daily practice in the easy singing range until a model vocal tone is found. Then practice also the exercises on the open and closed tones, without materially changing the pharynx pose required for the model tone, so that the vocal tone on inconvenient vowels approaches as much as possible the model tone. This exercise must be continued in order to obtain a uniform tone quality on every vowel sound, on high as well as low tones of the vocal range. (Exercises 5 to 10, Sects. 1, 3, 5.)

e. Sing the exercises with as full a tone power as the even breath current will allow, but do not force the breath pressure with the diaphragm; let the breath ooze out. (Sect. 10.)

f. While firmly maintaining the pharynx pose, try to expand the cup space (Fig. 6, *c*), in order to obtain a fuller tone, for only by the expansion of the cup can a full quality of tone be obtained. Try to increase the volume of each lower tone in Exercises 1 to 10. (Sect. 40.)

g. Begin the practice of the pure vowels without the preceding consonants in Exercises 5 to 10 as soon as possible. Seek to produce an even quality of tone for the closed vowels, as also for the open vowels in Exercises 5 to 8. Do not produce a tone too open nor too closed, but seek to emit a clear, resonant Italian A quality. This should also be the object in Exercises 9 and 10 where the five Italian vowels are to be produced in one breath. (Sect. 12.)

h. The distinctive sound feature of each vowel should be brought out as much as possible in singing the successive Italian vowels in Exercises 9, 10, but the pure vocal tone — the Italian A quality should not be sacrificed. The sound of *y* which is apt to creep in after the vowel I (see Sect. 19) must be avoided. The vowel U should be produced in the pharynx, not with closed lips. (Sects. 6, 7, 8.)

i. The easy singing range in Exercise 11 is extended in Exercise 13 to an octave for sopranos and tenors; and the easy singing range of altos and basses in Exercise 10 is extended to an octave in Exercises 11 and 12. This vocal range constitutes the middle singing compass of these four different voices; ***hence these middle tones demand the greatest attention in voice training.*** The model vocal tone of each voice must

be obtained and established *in this range of eight middle tones*, and not before the singer has acquired a *fair conception* of the model tone he is able to produce should the vocal range be extended above and below this easy middle range of one octave, neither downward nor upward.

k. The upper middle range for sopranos and tenors — Exercise 13 — will offer no special difficulties. The two upper tones in Exercise 13 demand more muscular tension than the lower to produce the same tone quality. The whole upper extension of the alto range in Exercise 11 may be produced either in the chest range or middle range — that is, in the chest or medium register (see Sects. 26, 27). This feature of voice training must be well understood before the proper training of this section of the alto voice is decided on. It is explained in Sect. 31. Do not worry the pupil with the explanation of the registers.

l. In Exercise 14 is presented the highest range of basses and baritones. These highest tones of the low male voices may also be produced in two different registers, either in chest or medium register. Some baritones produce these tones in a head tone quality, particularly in the delivery of soft passages, which are designated by some teachers as mixed tones (see Sect. 33). These highest tones in the baritone and bass voice must be developed by degrees *after the middle range is fairly well established.* The muscles of the larynx controlling the pocket bands are especially active in producing the higher tones, and these must be strengthened by a steady and careful development by singing the exercises very slowly. Any over-exertion or forcible practice will retard instead of improve this muscular development.

m. The production of the lowest vocal range of altos, mezzo sopranos and basses in Exercises 15, 16, necessitates a certain looseness of the muscular tension, which is required for the complete expansion of the larynx cavities and trachea. But yet to open or expand the larynx cup it also requires a certain muscular firmness; otherwise the low tones will be unsteady, and produce a trembling of the voice. This lowest range of tones consequently necessitates the utmost expansion of the trachea, and at the same time a steady and firm control of the larynx muscles to maintain the required open or expanded proportions of the cup cavity. This action is directly in opposition to that performed in producing the highest tones of a singer's vocal range. In the production of the highest tones the muscles and cup space are contracted, and in the emission of the lower tones the cup space is expanded. Both functions must be performed with a firm muscular control, but yet without rigidity or stiffness (see Sect. 37).

n. In Exercises 17 to 20, each tone of the vocal compass is to be equalized in tone quality in the ascending and descending scale, throughout the different voice sections A; B, C, D. This equalizing process should be confined to the singing range of each voice, in which the tones can be produced with *ease and comfort.* In extending the compass upward or downward no straining should be allowed, nor any change in the quality of the tone from that of the established model tone. Sing each tone with a full volume and resonance on the five vowels (*a*), then on the three vowels A, I, U (*b*, *c*). If the proper tone quality is established the exercise should be sung on the normal vowel A, as at *d*, or whatever favorable vowel best suited in producing a pure tone. The exercise should be practiced *daily*, more and *more slowly*, as the muscular power and breath supply increase. As the muscular power

and breath supply increase, the tone power should be increased also until these exercises can be sung with a resonant forte. The proper muscular development cannot be obtained by singing softly. Every pupil should aim to increase the breath power by practicing daily *deep breathing, long retention* of the breath, and steady and *strong expelling action* of the diaphragm. This can be practically obtained by judicious exercises apart from the singing exercises, during the daily walking period of the pupil.

Remarks on Exercises in Part II.

a. The exercises in tone attack with consonants 21 to 25 must be practiced until the different attacks are understood and can be practically produced. Explanations of the various consonant attacks are given in Sects. 13 to 19.

b. The attack with the click of the glottis on the vowels in Exercise 26 is explained in Sect. 20. It is a difficult mode of attack for some singers, as it demands a ready flexibility of the vocal cords. This attack is of the greatest importance in the florid style of music, which requires a natural muscular flexibility. Exercise 26 should be practiced in strict time; three and four notes may also be emitted instead of two to one beat, to enhance the muscular freedom.

c. The chanting of the alphabet — Exercise 27 — is an important feature in vocal culture, as it is a practical exercise in acquiring distinct articulation and clear enunciation, combined with a development of breath power, as well as the carrying quality and resonance of tone (Sect. 21). For altos and basses use the easy singing range.

d. The exercises 28, 29 give examples of tone ending with vowels and consonants. This phase of tone production should be practiced in conjunction with attack and articulation before the exercises in solfeggi are taken up (see Sect. 22).

e. The exercises in solfeggi — from 30 to 35 — present the diatonic intervals of seconds, thirds, fourths, fifths, and extend the intervals to sixths, sevenths, and octaves. In Exercise 30, *a*, the solfeggi syllables are to be sung, and at *b* the vowels of these syllables are to be sung, so that the singer obtains a correct conception of producing the different tones on the vowels, articulating the consonants of the syllables merely in the vocal attack or ending, as on the syllable *sol.* The tone quality for each group of tones should be even and uniform as if sung on one vowel — as at *c*, on the vowel A. The higher tone must not be emphasized by the breath, nor should the return to the lower be made by relaxing the muscles of the pocket bands, which is apt to produce a drawling or dragging effect (see Sect. 39, *C*). The exercise 30, at *c*, is to be sung two different ways on the vowel A. It is sung on one breath for both measures, and also with one breath for both measures, but with a pause between the first and second measure — where the breathing mark ' is placed — but yet *without taking breath*, merely making a breath pause and continuing without relaxing in the least the muscular tension, or the ready pose. These two modes of delivery are indicated by the sign A ⌣⌣, and are also to be practiced on the other intervals in Exercises 31, 32, 33, etc. The exercise with the breath pause is very effective in obtaining a control of the larynx muscles required for the ready pose, ease of vocal attack, as well as breath control. Throughout the exercises 32 to 35 a steady position of the pharynx is imperative. (See Sect. 38, *Note*, concerning this.) In Exercise 30 the breath may be renewed after each measure, as indicated, but it should

be the object of the pupil to sing each complete phrase of two or more measures in one breath.

f. Each exercise must be sung with a moderate degree of tone power without using force, either *mf* or *f*, so that the ringing quality and carrying power of the voice be developed. The vocal range of the exercises should not be carried above a high tone easily produced; no forcing should be allowed. Sing the solfeggi syllables distinctly, and aim to produce the characteristic sound of each vowel.

g. Sing the exercises as slowly as possible, and sustain each tone with a good tone volume. Increase the degree of slowness to improve the legato and sustaining character of the voice. There is no better exercise for developing muscular control and strength than slow delivery of a sustained tone, as in Exercises 17, 18. *Do not force the tone with the breath.*

Remarks on Exercises in Part III.

A young pupil without any vocal training or bad vocal habits upon beginning a regular course of vocal study should not be burdened with a detailed explanation concerning the nature and functions of the registers. Tone production and tone attack, as given in Parts I, II, should constitute the first studies and demand the attention of the pupil. The more subtle study of the registers, as given in Part III, should succeed these preliminary developments — unless a pupil's voice has already been exercised in the use of the registers, and has acquired bad habits, in which case the teacher may begin with the exercise in this part. It will be more difficult to correct bad habits than to develop an inexperienced, uncultivated voice. Before beginning this part, read Sects. 26 to 33.

a. Exercises 36 and 37 begin with the lowest tones of the medium register for soprano, alto and tenor. The four lower tones of this register require much training, in that they are usually weak in sopranos. In altos also, these four lower tones demand much practice, for in contraltos, whose chest tones are strong, these lower tones in medium are apt to be thin in comparison. The tones throughout this medium register should be produced with a ringing quality, either mezzo forte or forte, as no improvement would be gained by singing them softly. The highest tones must not, however, be forced, neither by muscular strain nor breath pressure. Sing these exercises more and more slowly as the muscular strength increases. (Sect. 26.)

b. The head register in Exercises 38 and 39 — contrary to the two highest tones in the medium register — must be produced softly at first, and not until the muscles of the pocket bands establishing the form of the cup necessary to produce the pitch of these higher tones in the head register have become sufficiently strengthened by practice, should the pupil attempt to sing these head tones *forte*. This muscular strength must come gradually. The exercises 38 and 39 should therefore be begun *p*, then *mf*, and lastly *f*. It may be found that a pupil is unable to sing these high tones at first in any other but a thin falsetto quality. This can be improved in time by having the pupil make the effort — while singing the sustained tone in Exercise 39 — to *expand the inner larynx space*, somewhat similar to the action of the larynx in producing the chest tones, or practice these falsetto tones in the manner of the exercise producing tone volume given in Exercise 61. (Sect. 28.)

c. The production of the tones in Exercises 40 and 41 in the chest register is different for different voices. The quality of the chest tones in altos is decidedly different from those in the medium register; altos

have therefore little difficulty in producing these tones in chest. But sopranos in most cases do not obtain the tones in the chest register as distinctly, emphatically, and easily as altos; nor do they experience as decided a change in the larynx. Sopranos are obliged, therefore, to make a greater effort to expand the larynx cavity in the production of the chest tones than altos. Some experience no change in the larynx nor in the quality of the tone. The teacher may find it a task in this case to have the pupil obtain an idea of the expanding action of the larynx cup necessary for the chest tone quality, or lower tones in every register. This action of expanding the inner larynx space may be conceived by the pupil by having him experience the feeling produced in the larynx by deep breathing with an open throat, retaining the open or expanded larynx while producing the chest tone; or by practicing on a low tone the exercise for producing tone volume, Exercise 61. This practice is also practical for tenors. (Sect. 27.)

d. The production of the chest tones in basses and baritones is without difficulty, as the chest register is their normal easy singing range. In certain baritones whose voice inclines towards the heroic tenor timbre, the full chest tones may be of a lighter character, requiring more development of the chest volume. The medium singing range of such baritones must, however, be developed to harmonize in tone quality and volume with the higher tones.

e. The higher tones (Exercises 44 to 46) of bass voices as well as of baritones require careful training, according to the natural physical capacity of each individual singer. If a bass can reach the higher tones in chest they should be gradually placed and developed in the chest register. If the pure chest quality cannot be obtained the mixed tones should be preferred, as in Exercise 44. If these higher tones in baritones can be produced in the tenor medium quality they should be developed as such — if they can be made to harmonize in quality and volume with the lower tones (see 33, D). These higher tones in Exercises 44 and 45 must be cultivated to enable the singer to produce them in a full, resonant tone. In whatever register this is obtained does not matter as long as these upper tones are uniform in quality and volume with those in the lower range (see Sect. 33).

f. The head tones in Exercise 46 must be cultivated by degrees. They must be sung softly at first, and can be improved only in proportion as the muscles of the inner larynx grow in strength to maintain the tension and resist the greater air current necessary for a more forte head tone. If these higher tones in the head register partake too much of the falsetto quality, they must be improved by producing a more expanded larynx cup while emitting the sustained tones. The exercise for increase of tone volume, Exercise 61, is practical for this purpose (see Sects. 30 to 33).

g. Exercises 47 and 48, for extension and crossing of registers, should not be given to every pupil. Alto voices having a decided chest register must cultivate both registers on these lower tones to equalize them as much as possible (31). Mezzo or dramatic sopranos also may be in need of this double training of these low tones. But lyric sopranos (30) have no absolute need for such training, nor light tenors (32); their voice being light they cannot produce these low tones in full chest quality. All that can be done for them would be to improve these low tones in the medium register, to increase their volume as much as possible (see 40). The chest tones in altos are naturally full and strong compared to the same tones in the medium. It is therefore advisable to avoid a too extreme

cultivation of these alto tones in the chest, but rather subdue and train the voice to obtain an even quality between the chest and medium tones in forte as well as piano.

h. In Exercises 49 and 50 the same tones should be sung in medium and head. The medium tones must not be over-developed in the forte to make a connection with the forte tones in the head register uneven. The medium tones should in this case be exercised to produce a piano, and the same head tones should be developed in forte. *The equalizing of both registers* in tone quality and volume is the artistic object of this training. (Sect. 41.)

i. The highest tones of the bass and baritone range in Exercises 51 and 52 should be cultivated in both registers only by very advanced vocal pupils. To begin this training too soon will either retard the practical development of a bass, or make the use of the upper tones uncertain. The artistic training of a bass voice requires more time, labor and patience than are required of a soprano. Baritones may cultivate these two registers sooner than basses, according to the nature of their vocal organ in inclining towards the bass or tenor quality (see 33, C).

Advanced Course.

Remarks on Exercises in Part IV.

The cultivation of the legato (Sect. 38) should begin with the first exercises in the connection of tones in Exercise 30.

a. In Exercises 53 and 54 the legato style is applied to scale passages. Each tone must be produced with precision and distinctness without giving any particular tone any special emphasis. The compass of each phrase is within the interval of an octave: the solfeggi syllables — do, mi, sol, do — indicate the four tones of the accompanying harmony. They should be sung first for the purpose of establishing the vocal range of the phrase and establishing the important tones of the harmony requiring attention in the delivery of the ascending scale in Exercise 53, and the descending scale in Exercise 54. The first measure is to be separated from the following by a short catch breath. The two tones at *a* are slightly detached with the aspirate H for a soft attack. At *b* the four tones are detached similarly; and at *c* the eight tones with the last are combined on the vowel A (see 48, *Note*). The breath must be well controlled and reserved sufficiently for the final sustained tone. The tone power of the phrase should be gradually increased in time to a forte. These legato scale exercises should be delivered with as little muscular effort as possible. As the position of the pharynx is of importance in this connection, it is well to read what was said in Sect. 38, *Note*. These scale exercises should be sung throughout the whole range of each voice, paying special attention to uniformity of quality and volume.

b. In Exercises 55, 56 the ascending and descending scales are combined. Four tones are slightly detached at *a*, eight at *b*, and the whole phrase at *c* on the vowel A. The manner of delivering the last sustained tone is of importance. The muscles of the larynx must be well controlled to permit of an easy connection of the last two tones an octave apart; and the last tone should be held to prove that the breath supply is sufficient, and has not been exhausted. The exercise must be sung with a degree of power, either *mf* or *f*. (Sects. 38, 41, 42.)

c. The exercises 57 and 58 present a greater difficulty in delivering the legato than the scale exercises, owing to the distance between the tones to be connected. The mediating pharynx pose (38, *Note*) will greatly reduce this difficulty. To obtain this pose of the pharynx it is sug-

gested that the first measure be repeated before the whole phrase is sung, so that the upper and lower tone can be produced with ease. None of the tones must be emphasized, nor must the breath current be increased for the upper tone by the puffing action of the diaphragm. The last tone must be sung without a relaxation of the degree of power, which demonstrates a sufficient supply of breath. The tones must be well connected with an even tone power, either *p*, *mf*, or *f*. These exercises should also be practiced with the breath pause indicated by the two curved lines after the vowel A ⌣⌣.

d. Exercise 59 is a study in portamento in one register. The carrying of the voice upward from the first to the second tone on the syllable *fa*, and downward on the syllable *re*, in the first phrase, should be done softly at first with a breath pause, at *b*, so that the pupil's attention can be directed to the smooth connection of the two tones. The artistic production of the portamento phrase at *c* requires careful study and a good ear. Without a perfect control of the larynx muscles it is impossible. (Sect. 39.) The relaxation of the larynx muscles in the portamento downward, which produces the *strisciato*, must be guarded against.

e. The production of a portamento in two registers in Exercise 60 should not be undertaken before the pupil is able to sing the portamento in one register with ease, and is well able to sing the tones produced in two registers presented in Exercises 47 to 52. These two phases of vocal culture are absolutely imperative before an artistic portamento in two registers can be delivered (see Sects. 41, 42).

f. The attention of the pupil towards the acquisition of tone volume should be directed to this important point at the beginning of his vocal study in conjunction with Part I, and should be practiced continually. The manner of proceeding in this study has been presented in Sect. 40. This practice should be applied to every tone of the pupil's vocal range, as also to every tone of the different registers beyond that in Exercises 61 and 62.

g. In the blending of the registers — Exercises 63, 64 — the greatest attention must be given to an artistic joining and smoothing of two registers. No change in the tone quality nor tone volume should be noticeable at the change of registers. This shortcoming would be less noticeable where words are sung, or the solfeggi syllables, as at *a*, or where a word or vowel is sung when the change of registers occurs, as at *b*. But where the registers change without a change of vowel, as at *c*, such unevenness of quality and tone volume is very evident. Exercises 63 and 64 should be sung softly at first, and when the blending is pretty well produced, the exercises may be sung *mf* or *f*, or with various dynamic shadings. The changes of registers as here indicated are not suitable for every voice. They may be improved according to the conditions of the various voices. (Sects. 41, 42.)

Remarks on Exercises in Part V.

a. The exercise in dynamic shading — Exercise 65 — may be taken up as soon as the voice is well placed, and the breath sufficiently controlled. The three intermediate dynamic degrees — *p*, *mf*, *f* — should be practiced first, as at *a*, by slightly detaching the three tones by the aid of the aspirate H, before the same degrees are produced as one tone, at *b*. The reverse method is applied in the second measure — *f*, *mf*, *p*. The exercise must be sung slowly, and the last sustained tone sung with a good quality in *f* as well as *p*. The exercise should be extended to each tone of the vocal compass. (Sect. 44.)

b. The crescendo and decrescendo in two registers, Exercises 66, 67, 68, must not be practiced before the use of the registers and the production of tones in two registers are established. The change of register may be varied from the example indicated; it may be made a beat sooner or later according to the condition of the pupil's voice. Particular care must be taken to avoid the break in the voice during the change of registers, (see 36). This is more apt to occur on the upper tones of the male voice, Exercise 68, than in women's voices. (Sects. 45, 46, 47.)

c. The five degrees of dynamic shading — Exercise 69 — require a perfect breath supply and control. The exercise in alphabetic chanting — Exercise 27 — may be practiced in the manner of Exercise 69, by increasing and decreasing the tone volume, thus forming a preparatory study in tone shading. Exercise 69, like the preceding, should be practiced on every tone of the vocal range. Exercise 70, with a change of register, must be practiced very slowly. The last sustained tone must be made to ring in the *ff*, and be of sufficient volume in the *pp* (see 40, *Note*).

d. The exercise in the swell tone — Exercises 71, 72 — will occasion little difficulty if the preceding exercises, from 65 to 70, are well practiced. What was said in reference to those exercises applies here, where the crescendo and decrescendo are produced on one tone in one breath. (Sect. 47.)

e. The execution of the repeated tone with the legato attack — Exercise 73 — should be practiced first with a slight emphasis for each tone obtained by the aspirate H, as at *a*, before the group of repeated tones is delivered on the vowel A, as at *b*, without the H attack. But yet the number of tones must be heard softly delivered. The exercise should therefore be sung *p* or *mf*. The idea of the soft legato attack may be better observed in Exercise 74, where the first of the two connected notes is softly attacked (see 48).

f. The staccato attack, in Exercise 75, is produced by the click of the glottis. The two phases of this attack are explained in Sect. 49. This attack should begin *pp*, so that the action of the opening of the glottis is distinctly heard. The other dynamic degrees of tone power should not be attempted before the staccato click can be well controlled with rhythmical precision in the larynx. After this is obtained, Exercises 76 and 77 may be practiced. The mediating pharynx pose (38, *Note*) is necessary in producing the staccato in the greater vocal compass of these latter exercises. These exercises should be practiced *p*, *mf*, and *f*, as well as with other dynamic shadings, throughout the whole vocal range. Exercises 17, 18 are practical for this purpose.

g. The exchange of the legato with the staccato attack in Exercise 78 must be made distinct and decided. The larynx muscles must be controlled with ease, and the breath as well. The pharynx pose must be favorable, and change as little as possible.

h. The marcato in Exercise 79 may be started with the aspirate H at first, but should be produced without it, as at *b*. The diaphragm only should act in the marcato as well as the martellato in Exercise 80. The breath management is of the utmost importance in both attacks (see 50). It must be steady and well sustained throughout each phrase. The breath supply must be greater for the martellato in bass voices than the marcato in female voices.

i. The note flautato in Exercise 81 alternates with the staccato. The breath must be well retained by a firm control of the chest muscles. The singer must

assume and maintain the position of the ready pose. (Sect. 9.)

Remarks on Exercises in Part VI.

Read Sect. 53 for an introductory.

a. The long appoggiaturas in Exercise 82 at B are to be sung as if the short notes were part of the measure, as at A (see 53, A).

b. The execution of the turn in Exercise 83 must be well sustained with a full value of the notes presented, to form an even legato phrase. It should be practiced rather more slowly than hastily. Even in Exercise 84 the turn should be sung this way, for by the slow delivery of the four tones of the turn, the action of the pocket bands (Fig. 6, *d*, *d*) obtains better results than if the four tones were rendered quickly. The ascending example in Exercise 84, as also the descending exercise 85, should be sung in every part of the vocal compass (see 53, C).

c. In Exercise 86 the group of notes must be sung slowly and be well sustained to obtain the necessary control of the pocket bands in delivering the slow trill followed by the turn. This exercise should be extended to include the higher and lower tones of the compass. Each phrase must be delivered in a resonant tone quality, either in *mf* or *f*. The upper of the two tones of each phrase must be made to stand out prominently, as important as the first tone, to secure a perfect trill. The speed of the exercise should be gradually increased.

d. The two short tones in the mordent Exercise 87, — must be executed quickly but distinctly, which requires a perfect control of the larynx muscles. This exercise should therefore not be undertaken before the preceding exercises 84 and 85 can be sung in a fast tempo. The two short notes in Exercise 87 establish a three-tone group with the principal note — a prefixed half turn. In Exercise 88 they are placed after the principal note, an appended half turn (see 53, B). The exercises should be sung with syllables, at *a*, and a single vowel, at *b*.

e. The trill exercises — 89 and 90 — must be practiced very slowly at first; the tempo may be increased as the facility to sing the two tones precisely and distinctly increases. The example in Exercise 89 should be well studied before the proper form of the trill in Exercise 90 is studied (see 53, D).

f. The easy and graceful rendition of the acciaccatura in Exercise 91 demands great muscular flexibility, which is rarely found except in light voices. The short notes must be sung quickly and without any appearance of effort (53, E). The glide in Exercise 92 is similarly delivered. The small notes must be distinctly heard. Both exercises must be practiced slowly, and the principal tones well sustained (53, F).

g. The exercise in anticipation — Exercise 93 — should be studied in conjunction with the portamento — Exercise 59. The anticipated tones should not be drawled nor dragged into the following, but must be rendered in an even legato manner approaching the portamento. The repeated tone must be softly attacked, as it is an example of the raddoppiate — Exercise 73 (see 53, G).

h. The exercises in chromatic intervals — 94 and 95 — must be practiced slowly at the outset to assure the exact pitch of the semitone progression. The first two chord tones must be well and distinctly conceived before the intervening chromatic tones are sung. In the last measure the principal tones of the harmony — indicated by separate stems — must be looked upon as the most important tones, and therefore slightly emphasized in beginning

chromatic scale exercises. It is advisable to begin *p*, and increase the exercise to *mf* or *f* when the ear has been sufficiently trained to execute the chromatic tones with accuracy. The syllables at *a* should be practiced before the exercise is sung with the vowel at *b*.

i. The arpeggio exercises — 96, 97 — should be studied to bring out the upper tone — which is repeated by a soft attack — with ease, so as to avoid the breath emphasis which is usually applied in reaching the *upper tone* in arpeggio, as in Exercise 98. This breath emphasis on the highest tone is wrong; the breath pressure must be even for the whole group of tones — Exercises 99 and 100 will obtain this. The pharynx pose indicated in Exercise 57 must be employed to assure this even legato delivery. If this is attained the singer will have less difficulty in executing the arpeggios in Exercises 102 and 103. The pupil will find it quite a task to sing the four tones of the chord of the diminished seventh in Exercise 104 in perfect intonation. This exercise should therefore be studied slowly at first, to permit the pupil to conceive and execute the intervals in a pure intonation. (Sect. 54.)

k. The exercise in syncopation — 105 — has no vocal difficulty. The task consists in rendering the rhythmical peculiarity of the syncopation. This has been explained in Sect. 55.

Note. The exercises printed in this volume are more general; they are intended merely to serve as examples to the teacher. If therefore the exercises for each voice are not contained in this volume, they will be found in the special books of exercises for each separate voice, where they are more extended, and presented in a more practical form.

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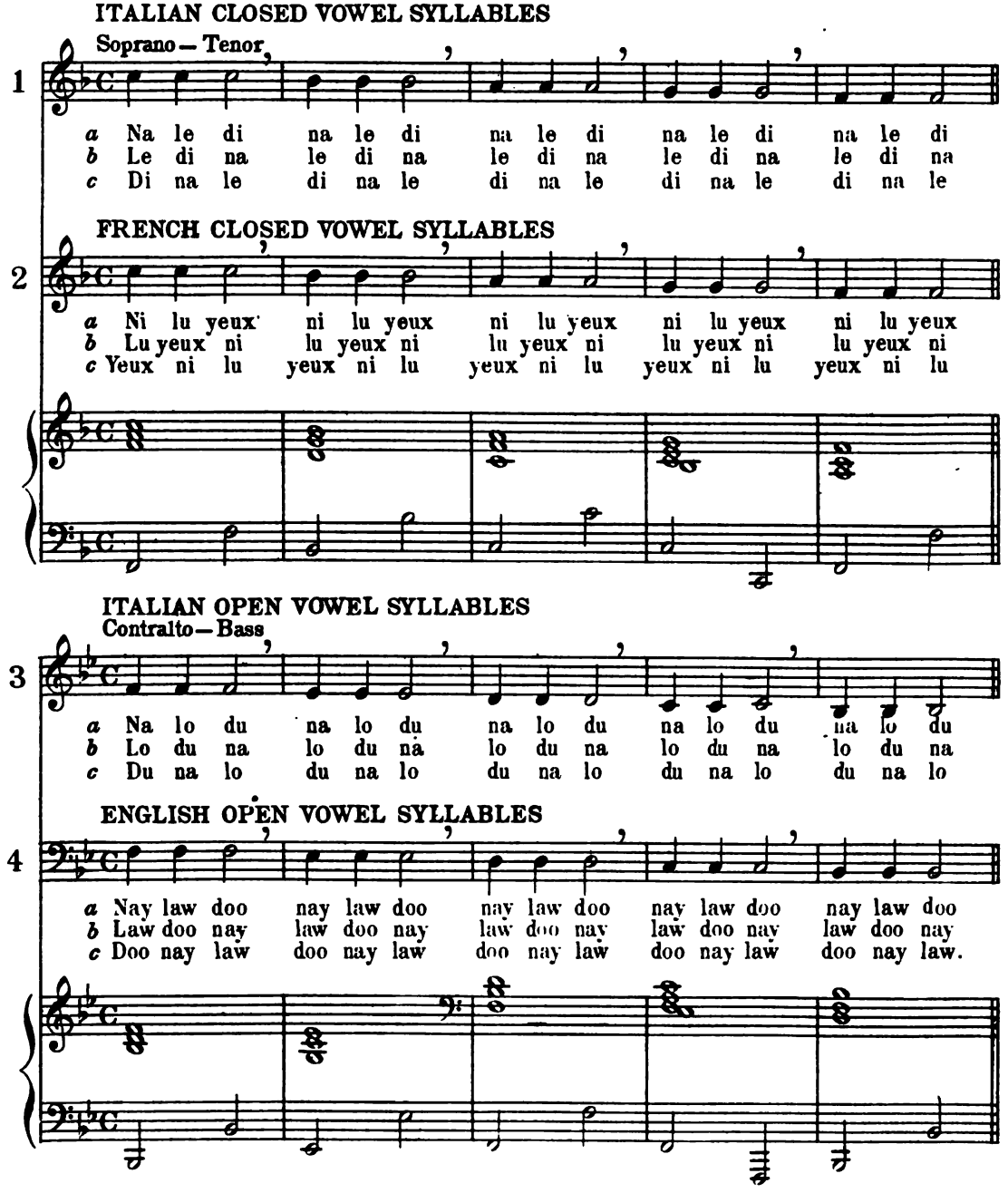
ELEMENTARY EXERCISES

FOR DIFFERENT VOICES

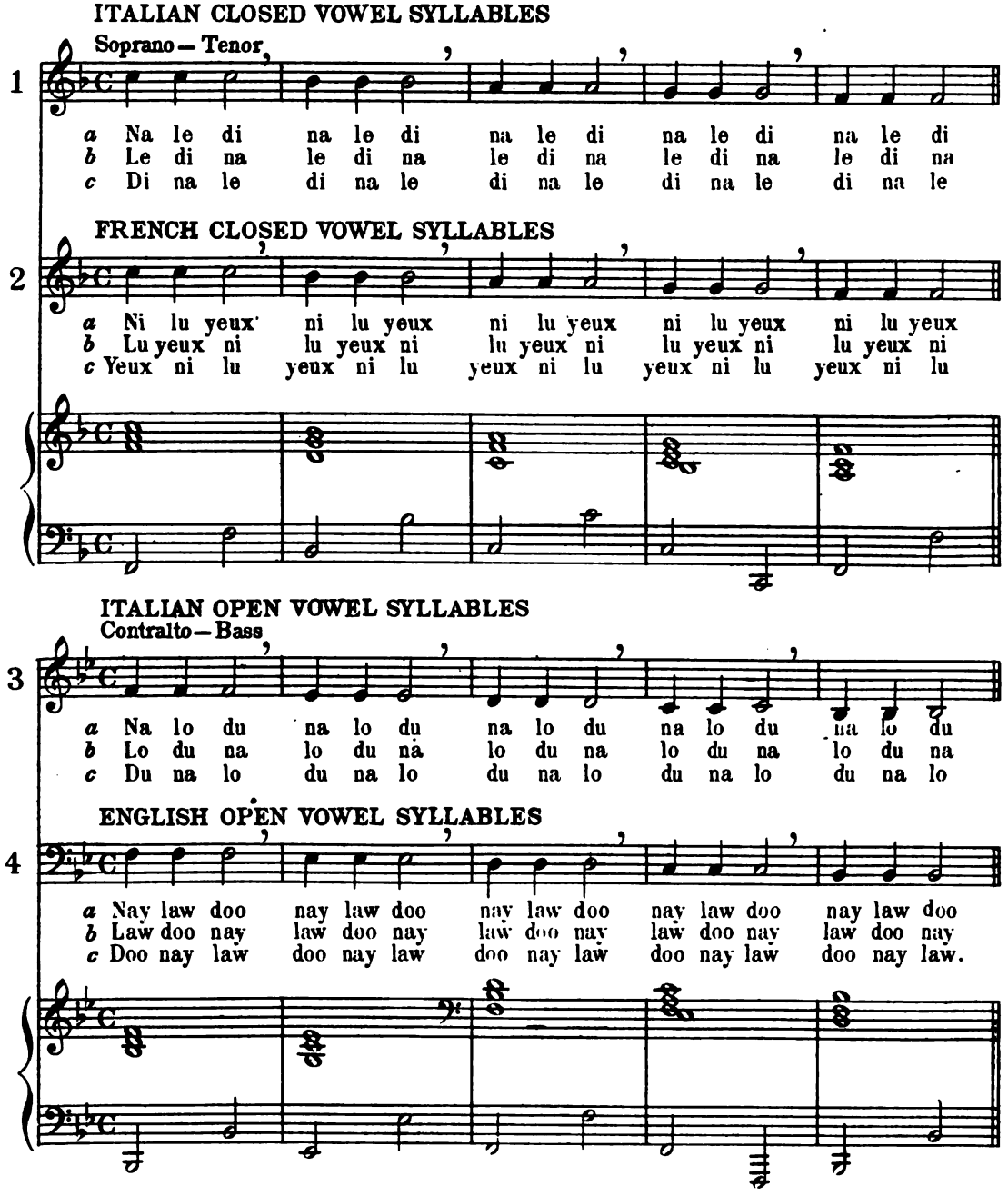
PART I — TONE PLACING


ITALIAN CLOSED VOWEL SYLLABLES
Soprano — Tenor
1
a Na le di na le di na le di na le di na le di
b Le di na le di na le di na le di na le di na
c Di na le di na le di na le di na le di na le
FRENCH CLOSED VOWEL SYLLABLES
2
a Ni lu yeux ni lu yeux ni lu yeux ni lu yeux ni lu yeux
b Lu yeux ni lu yeux ni lu yeux ni lu yeux ni lu yeux ni
c Yeux ni lu yeux ni lu yeux ni lu yeux ni lu yeux ni lu
ITALIAN OPEN VOWEL SYLLABLES
Contralto — Bass
3
a Na lo du na lo du na lo du na lo du na lo du
b Lo du na lo du na lo du na lo du na lo du na
c Du na lo du na lo du na lo du na lo du na lo
ENGLISH OPEN VOWEL SYLLABLES
4
a Nay law doo nay law doo nay law doo nay law doo nay law doo
b Law doo nay law doo nay law doo nay law doo nay law doo nay
c Doo nay law doo nay law doo nay law doo nay law doo nay law.

ELEMENTARY EXERCISES

FOR DIFFERENT VOICES

PART I — TONE PLACING


ITALIAN CLOSED VOWEL SYLLABLES
Soprano — Tenor
1
a Na le di na le di na le di na le di na le di
b Le di na le di na le di na le di na le di na
c Di na le di na le di na le di na le di na le
FRENCH CLOSED VOWEL SYLLABLES
2
a Ni lu yeux ni lu yeux ni lu yeux ni lu yeux ni lu yeux
b Lu yeux ni lu yeux ni lu yeux ni lu yeux ni lu yeux ni
c Yeux ni lu yeux ni lu yeux ni lu yeux ni lu yeux ni lu
ITALIAN OPEN VOWEL SYLLABLES
Contralto — Bass
3
a Na lo du na lo du na lo du na lo du na lo du
b Lo du na lo du na lo du na lo du na lo du na
c Du na lo du na lo du na lo du na lo du na lo
ENGLISH OPEN VOWEL SYLLABLES
4
a Nay law doo nay law doo nay law doo nay law doo nay law doo
b Law doo nay law doo nay law doo nay law doo nay law doo nay
c Doo nay law doo nay law doo nay law doo nay law doo nay law.

EQUALIZING OF VOWEL TONES

EQUALIZING OF CLOSED VOWELS

Soprano — Tenor

5

A E I E A A E I E A A E I E A A E I E A A E I E A

EQUALIZING OF OPEN VOWELS

6

A O U O A A O U O A A O U O A A O U O A A O U O A

CLOSED AND OPEN VOWELS

Alto — Bass

7

a A E I E A A E I E A A E I E A A E I E A A E I E A

b A O U O A *simili*

8

a A E I E A A E I E A A E I E A A E I E A A E I E A

b A O U O A *simili*

CONSECUTIVE VOWELS

Soprano — Tenor

9

a A E I O U A E I O U A E I O U A E I O U A E I O U

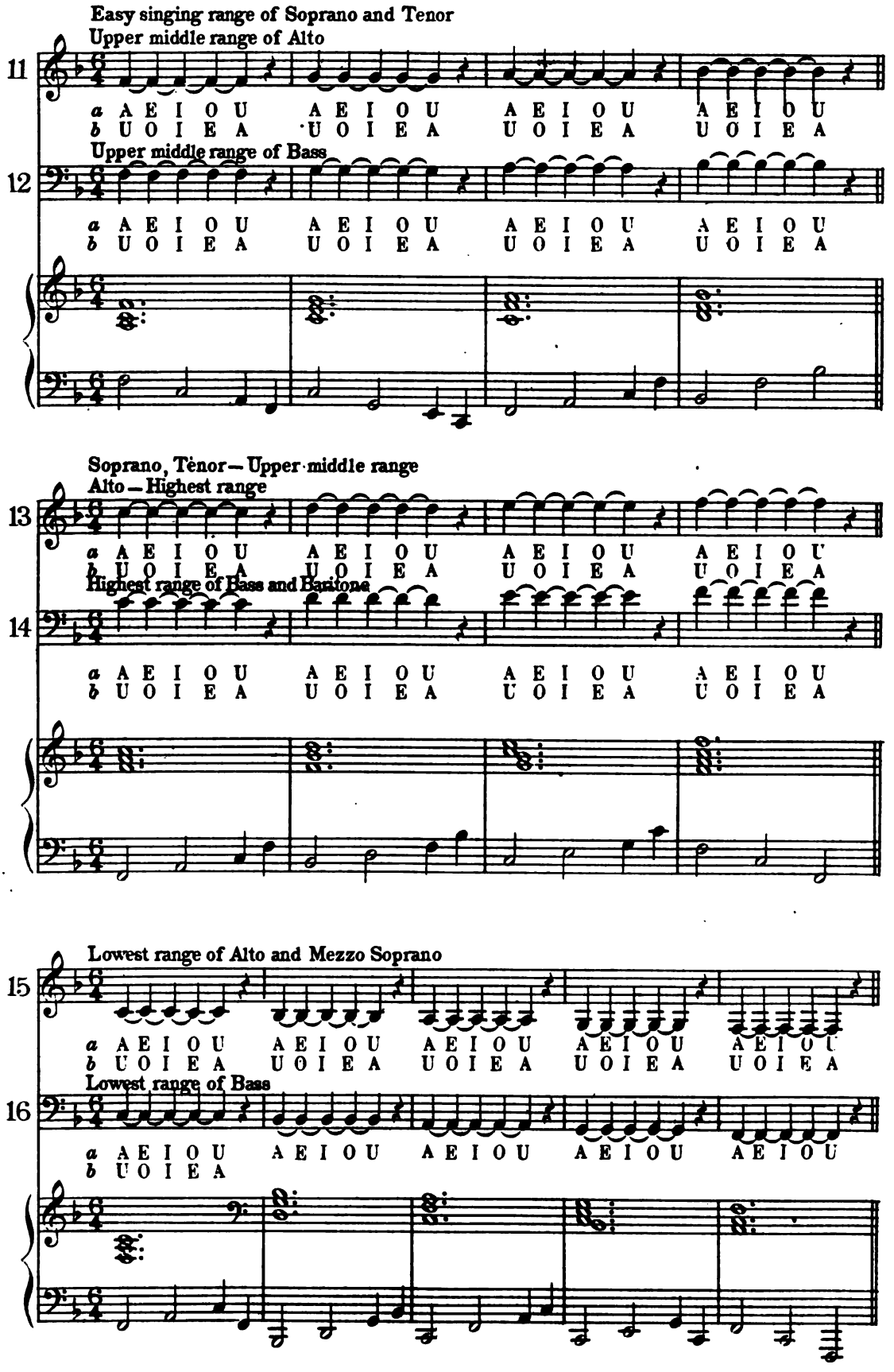
b U O I E A U O I E A U O I E A U O I E A U O I E A

Alto — Bass

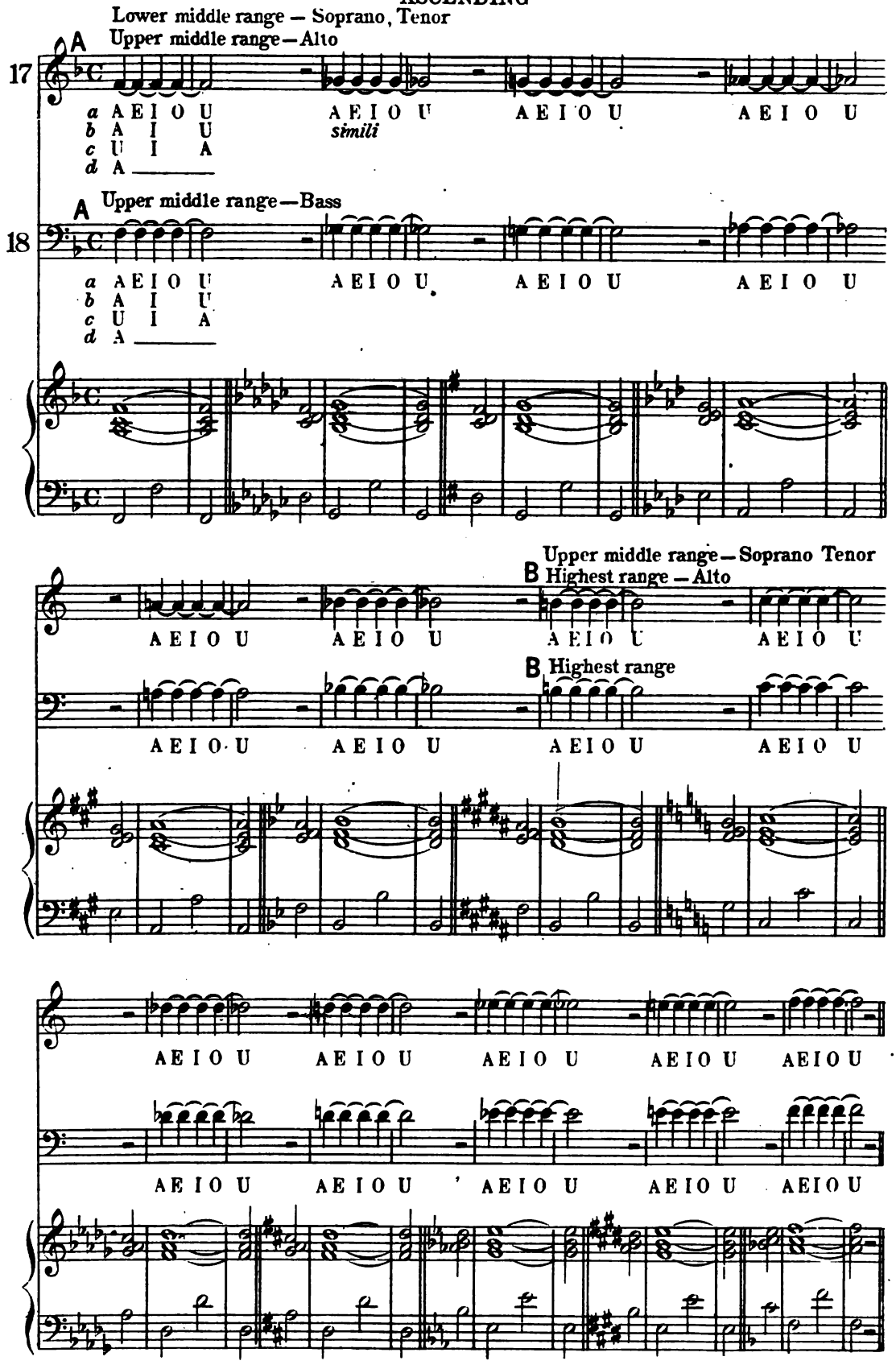
10

a A E I O U A E I O U A E I O U A E I O U A E I O U

b U O I E A U O I E A U O I E A U O I E A U O I E A

EXTENSION OF VOCAL RANGE

Easy singing range of Soprano and Tenor
Upper middle range of Alto
11
a A E I O U A E I O U A E I O U A E I O U
b U O I E A U O I E A U O I E A U O I E A
Upper middle range of Bass
12
a A E I O U A E I O U A E I O U A E I O U
b U O I E A U O I E A U O I E A U O I E A
Soprano, Tenor—Upper middle range
Alto—Highest range
13
a A E I O U A E I O U A E I O U A E I O U
b U O I E A U O I E A U O I E A U O I E A
Highest range of Bass and Baritone
14
a A E I O U A E I O U A E I O U A E I O U
b U O I E A U O I E A U O I E A U O I E A
Lowest range of Alto and Mezzo Soprano
15
a A E I O U A E I O U A E I O U A E I O U A E I O U
b U O I E A U O I E A U O I E A U O I E A U O I E A
Lowest range of Bass
16
a A E I O U A E I O U A E I O U A E I O U A E I O U
b U O I E A

EQUALIZING OF COMPASS

ASCENDING

Lower middle range — Soprano, Tenor
Upper middle range—Alto
A
17
a A E I O U
b A I U
c U I A
d A
A E I O U
A E I O U
A E I O U
simili
Upper middle range—Bass
A
18
a A E I O U
b A I U
c U I A
d A
A E I O U
A E I O U
A E I O U
Upper middle range—Soprano Tenor
B Highest range—Alto
B Highest range
A E I O U
A E I O U
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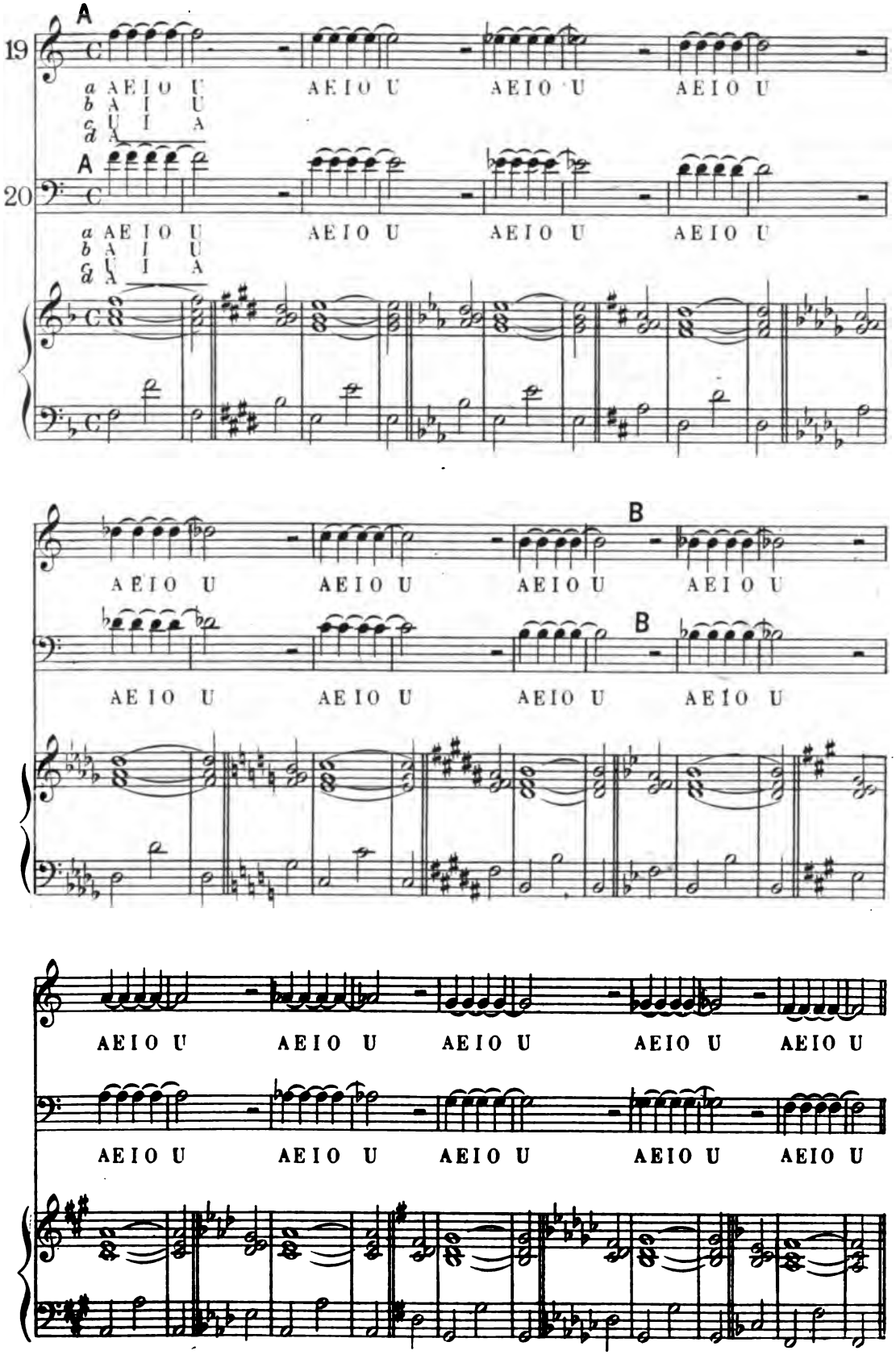
DESCENDING

A
19
a AEIOU
b AIU
c UIA
d A
AEIOU
AEIOU
AEIOU
A
20
a AEIOU
b AIU
c UIA
d A
AEIOU
AEIOU
AEIOU
B
AEIOU
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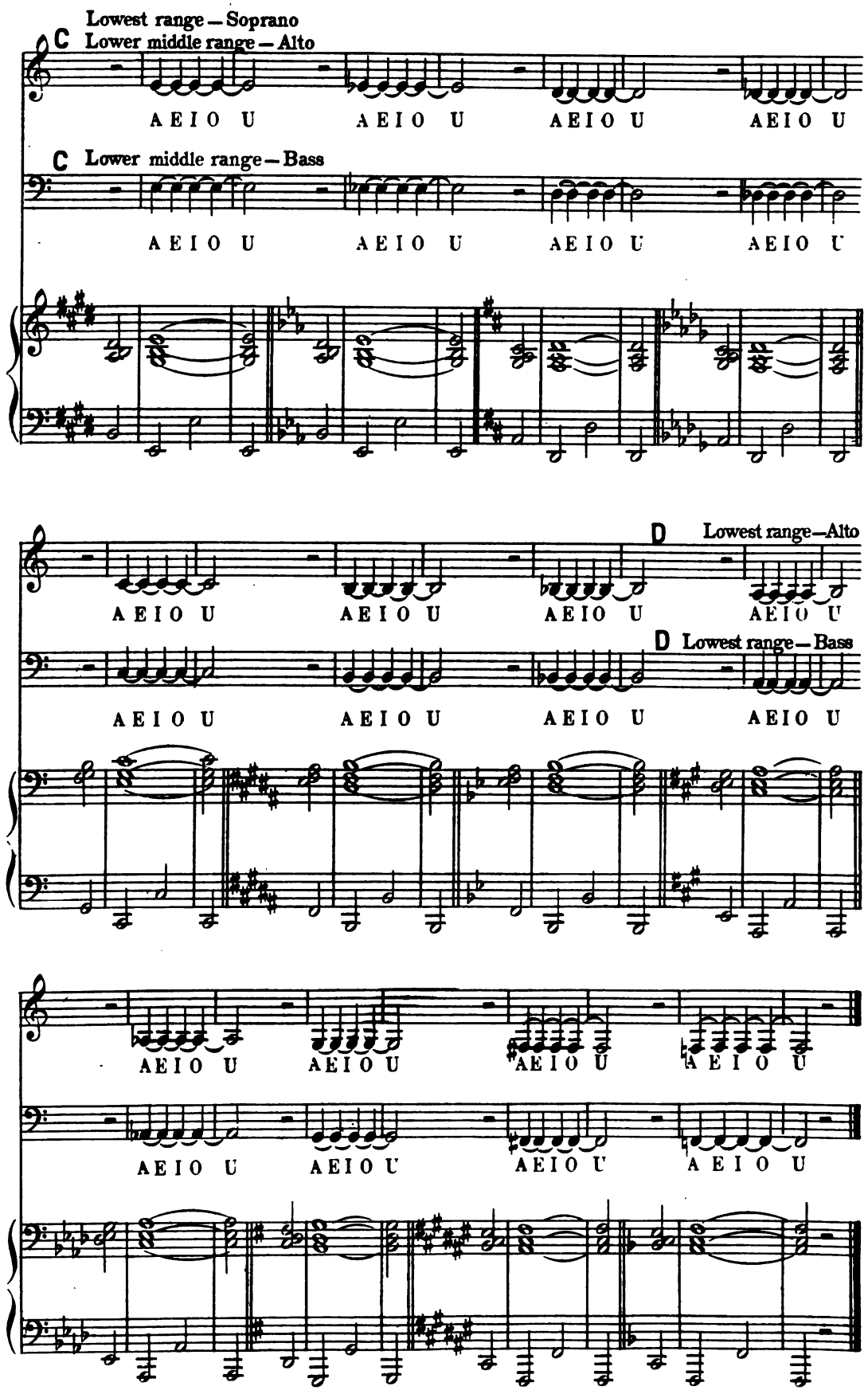

C Lowest range — Soprano
C Lower middle range — Alto
A E I O U
C Lower middle range — Bass
D Lowest range—Alto
D Lowest range — Bass

TONE ATTACK WITH CONSONANTS

Soprano and Tenor

With the aspirate – H

21

a Ha,he,hi, ho,hu, ha,he,hi, ho,hu, ha,he,hi, ho,hu, ha,he,hi, ho,hu, ha,he,hi, ho,hu.
b Ha he hi ho hu,

With the gutterals – G, K

22

a Ga,ge,gi, go,gu, ga,ge,gi, go,gu, ga,ge,gi, go,gu, ga,ge,gi, go,gu, ga,ge,gi, go,gu.
b Ka ke ki ko ku.

With the dentals D, T, N, L

23

a Da,de,di, do,du, da, de, di, do, du, da, de, di, do,du, da,de,di, do, du, da, de, di, do,du.
b Ta,te,ti, to, tu.
c Na,ne,ni, no, nu.
d La,le, li, lo, lu.

With the labials – B, P, M

24

a Ba,be,bi, bo,bu, ba,be,bi, bo,bu, ba, be,bi,bo, bu, ba,be,bi, bo,bu, ba,be,bi, ho,bu.
b Pa, pe,pi, po,pu.
c Ma,me,mi,mo,mu.

With the sibilants – S, Z, and liquid – Y

25

a Sa se si so su, sa se si so su, sa se si so su, sa se si so su, sa se si so su,
b Za ze zi zo zu,
c Ya ye yi yo yu,

N.B. For alto and bass, exercise in easy range Ex. 10.

TONE ATTACK WITH PURE VOWELS

CLICK OF THE GLOTTIS

Soprano and Tenor

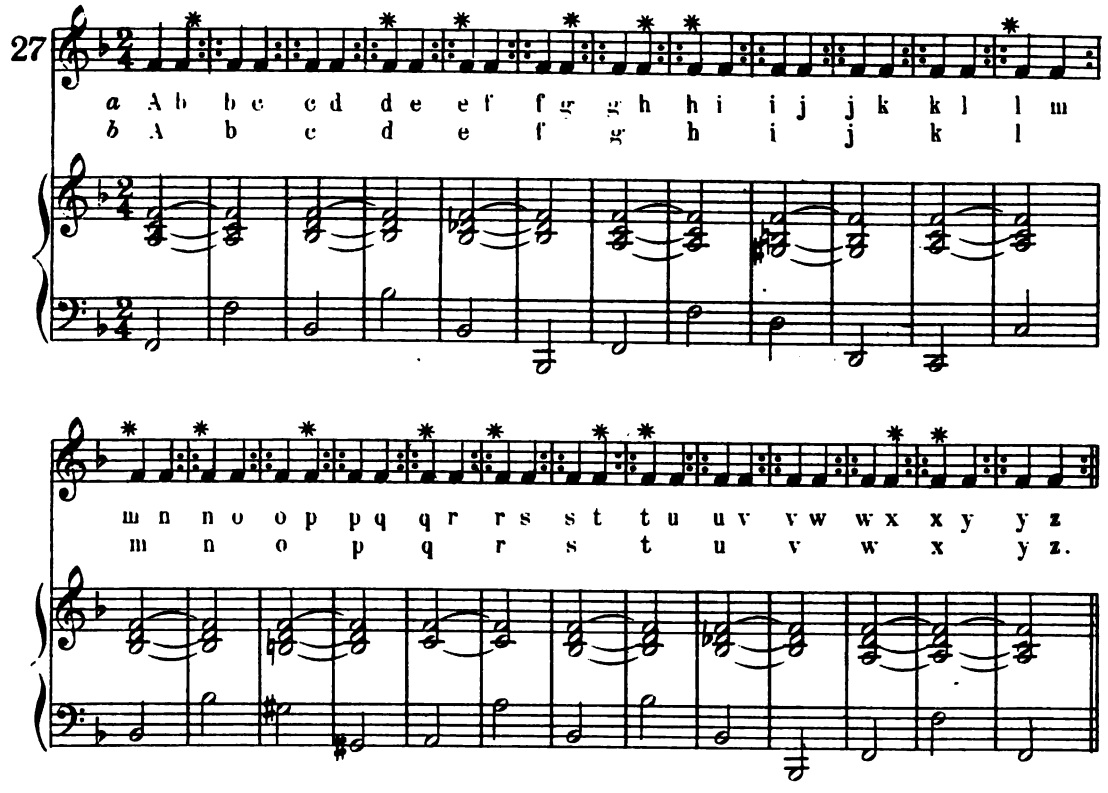
26

a A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A, A.
b A, E, I, E, A,
c A, E, I, O, U,

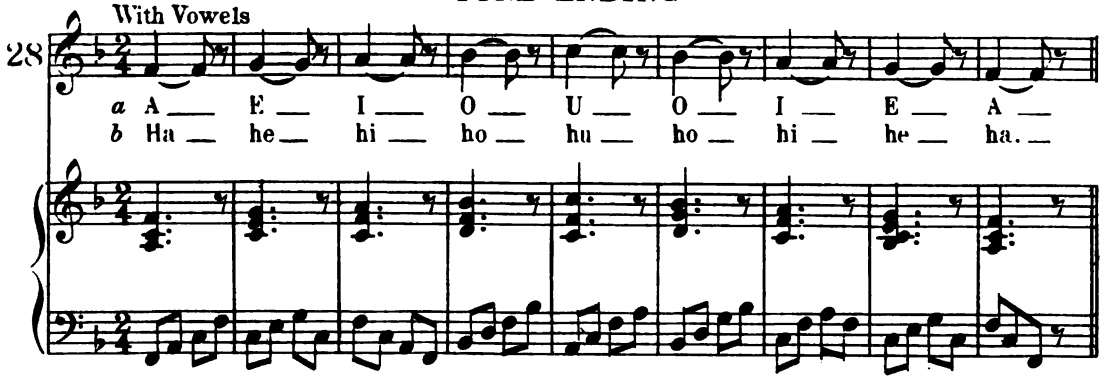
N.B. For alto and bass use the easy singing range Ex. 10

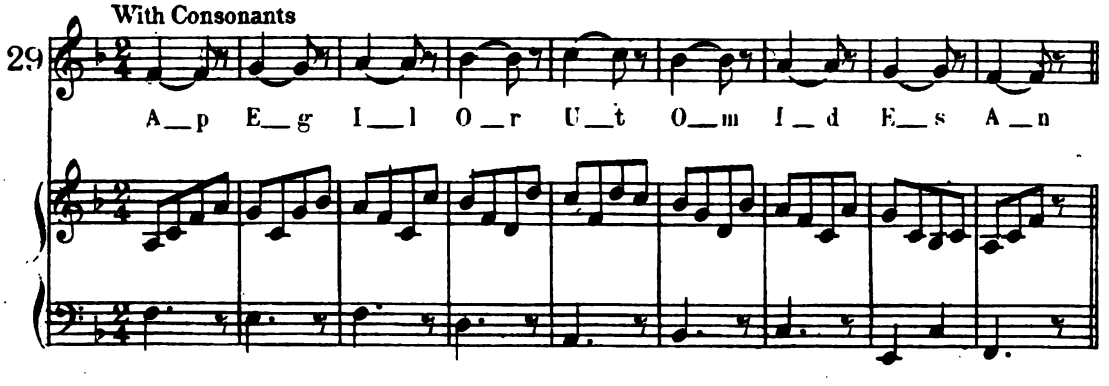
ALPHABETIC CHANTING

ARTICULATION

27

TONE ENDING

28 With Vowels



29 With Consonants

DIATONIC INTERVALS

SOLFEGGI

SECONDS

A Middle range Alto and Bass *(an octave lower)*

30

a Si do si do si do, do re do re do re, re mi re mi re mi, mi fa mi fa mi fa,
b I O I O I O, O E O E O E, E I E I E I, I A I A I A,
c A , A , A , A ,

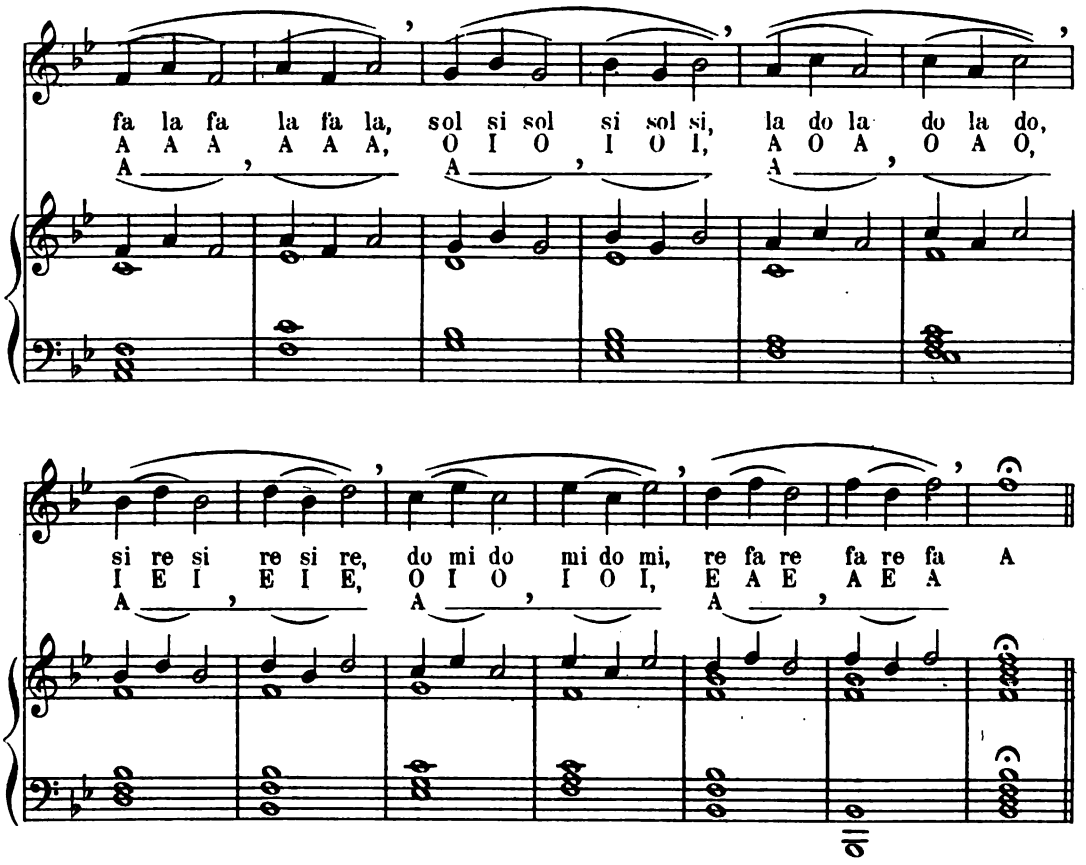
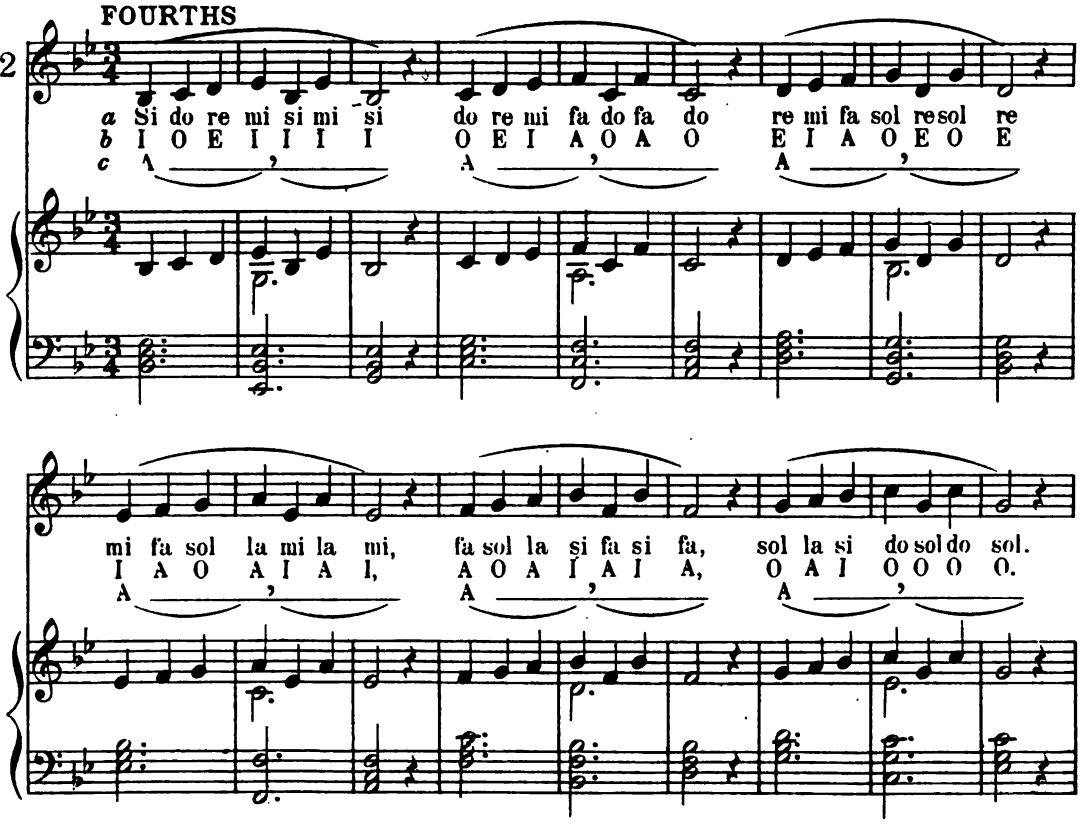
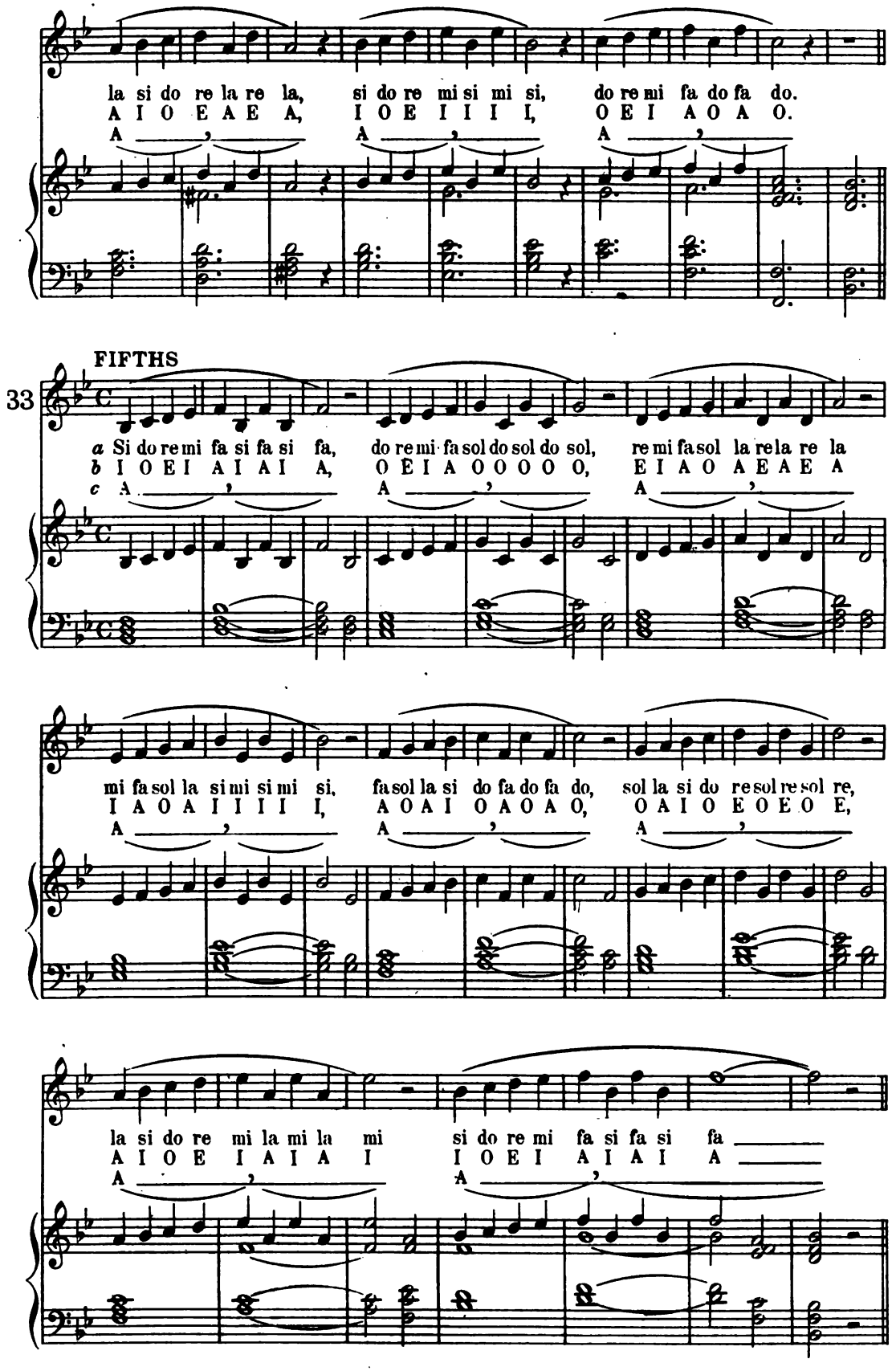
B Middle range Soprano and Tenor
Higher range Alto and Bass

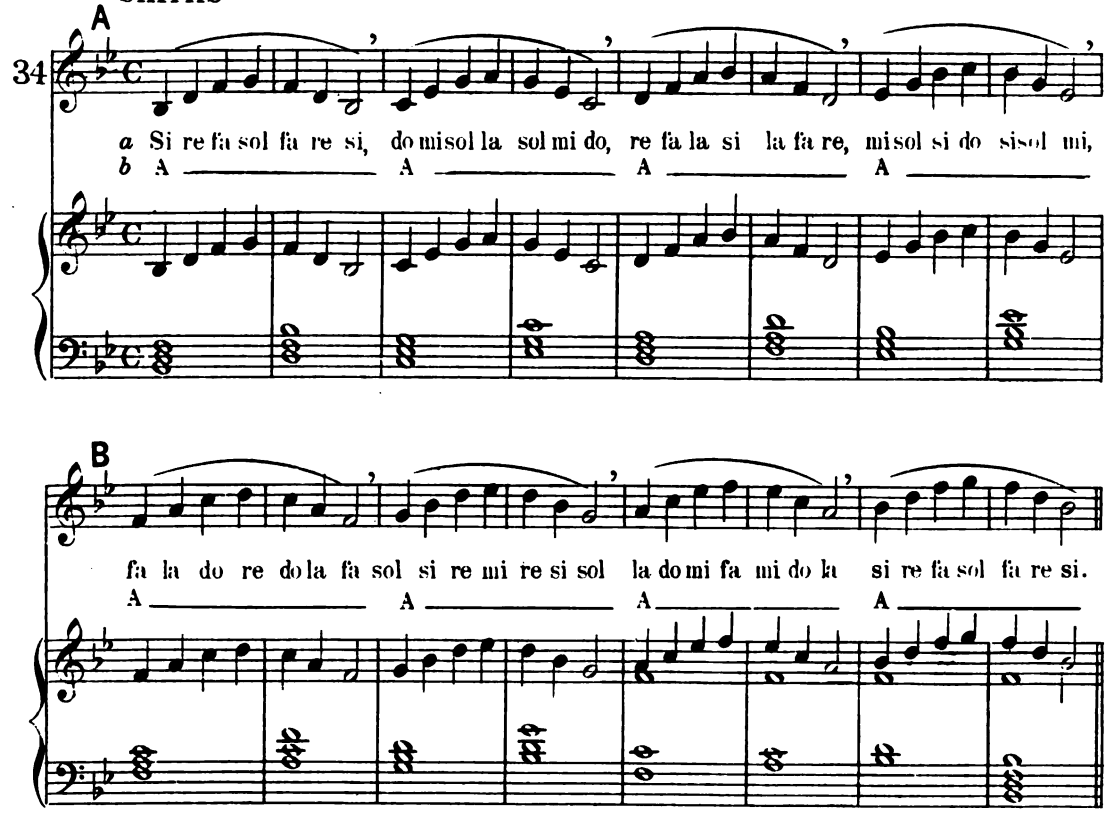
fa sol fa sol fa sol, sol la sol la sol la, la si la si la si, si do si do si do,
A O A O A O, O A O A O A, A I A I A I, I O I O I O,
A , A , A , A ,

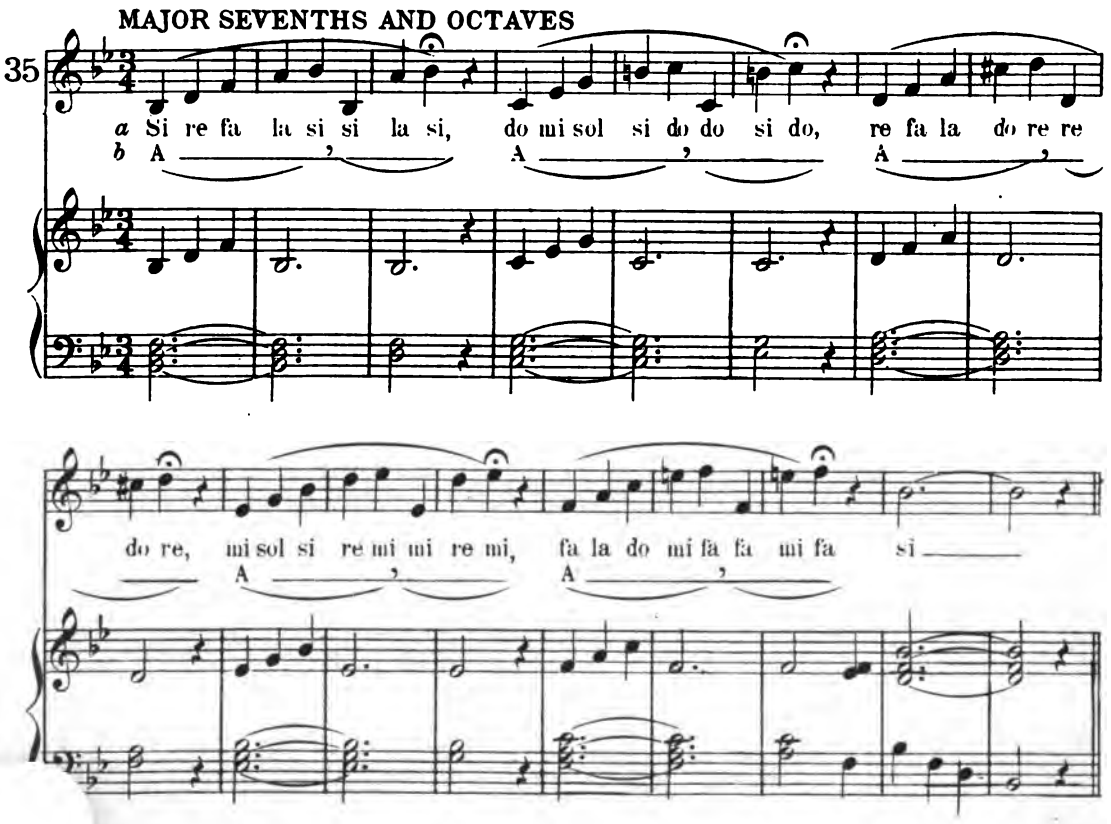
do re do re do re, re mi re mi re mi, mi fa mi fa mi fa fa
O E O E O E, E I E I E I, I A I A I A A
A , A , A ,

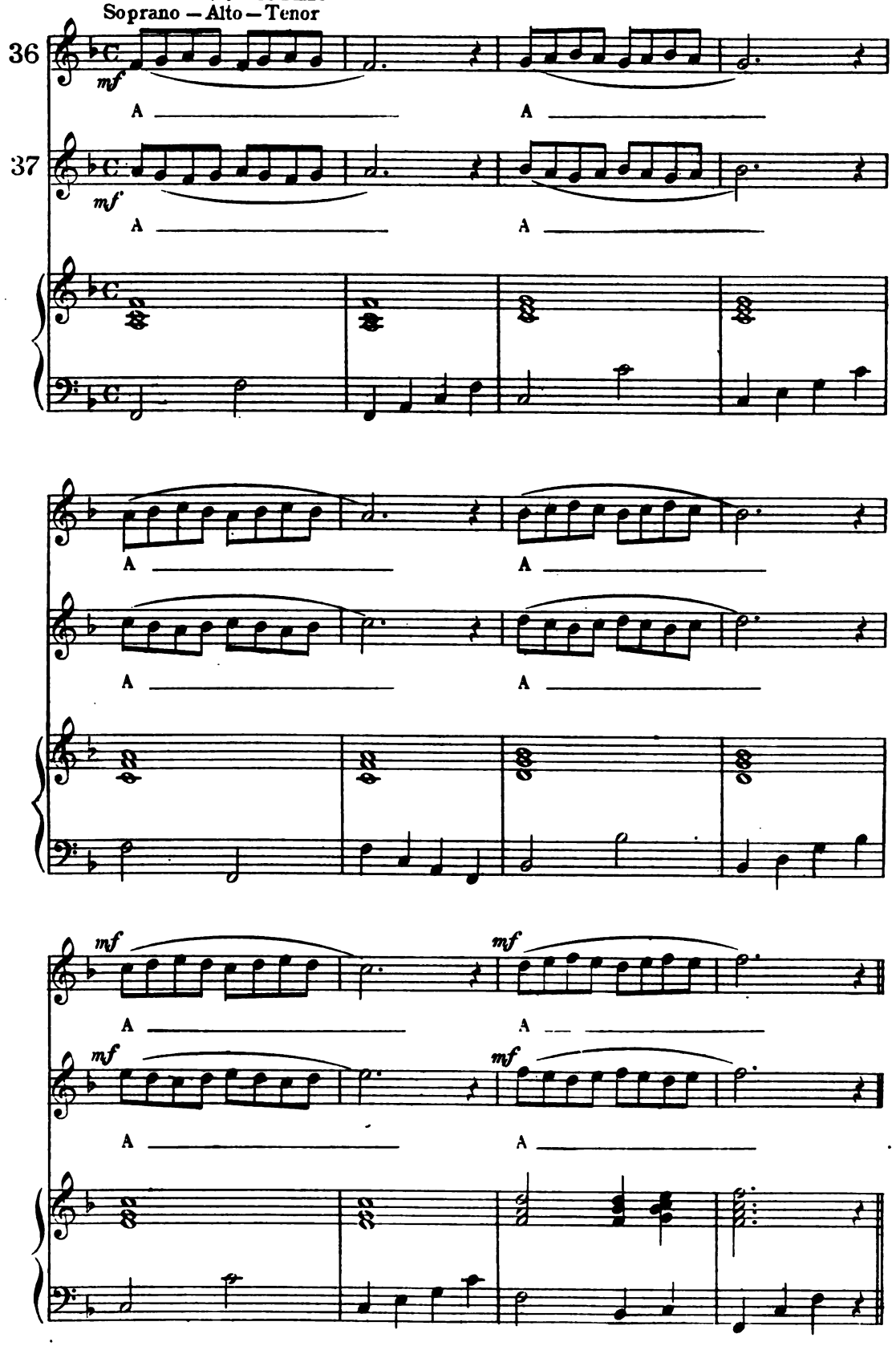
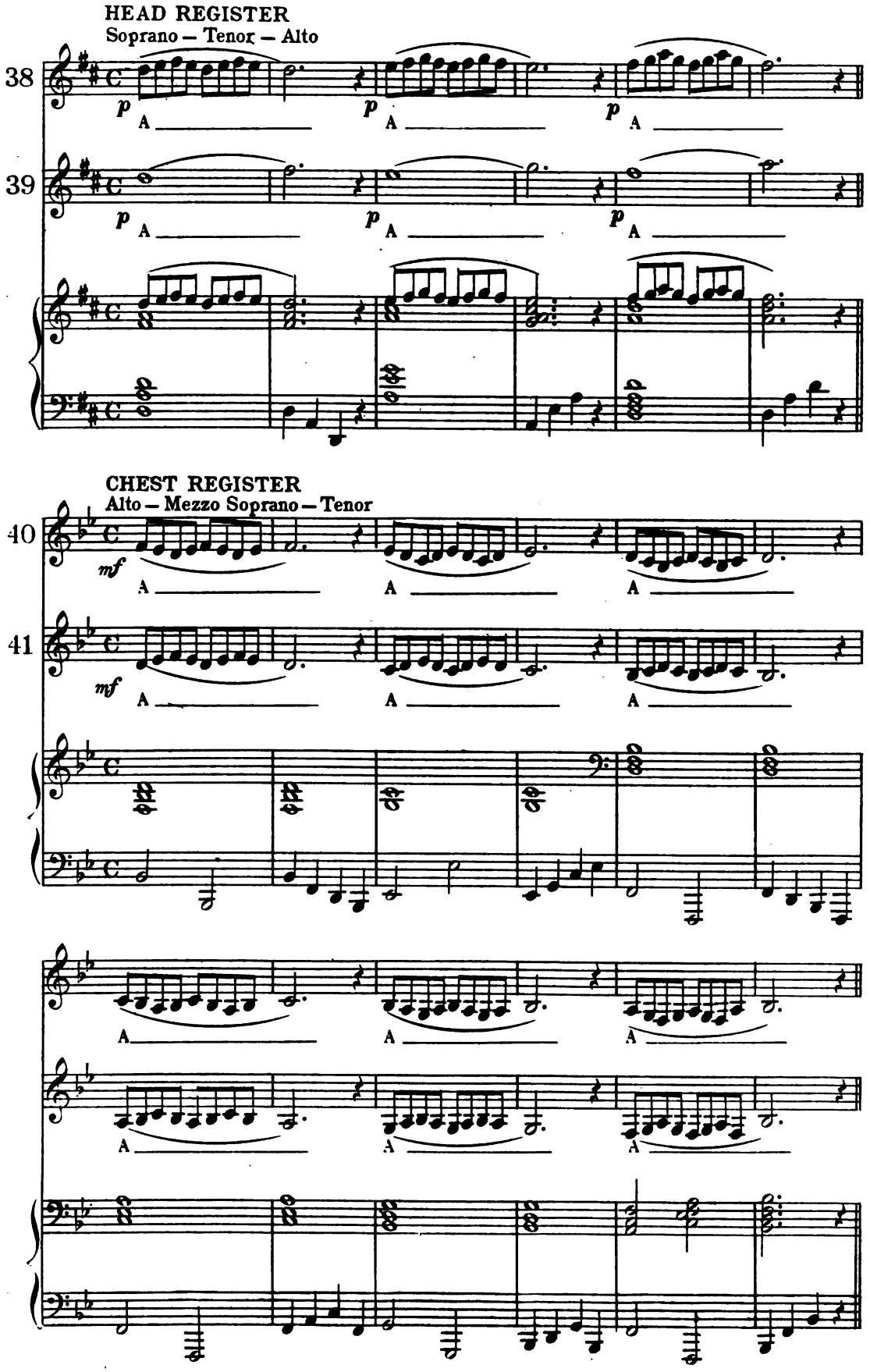
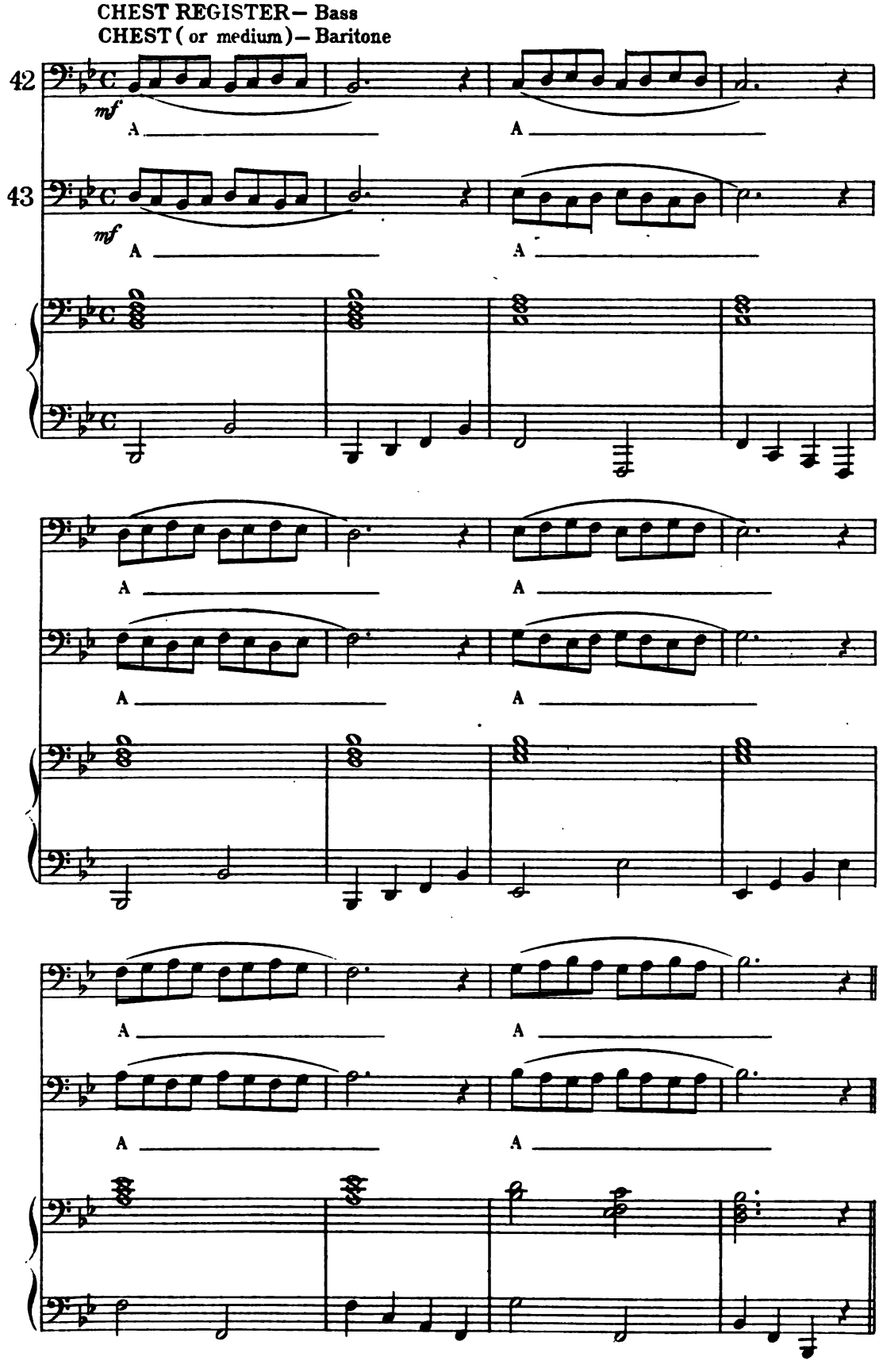
THIRDS

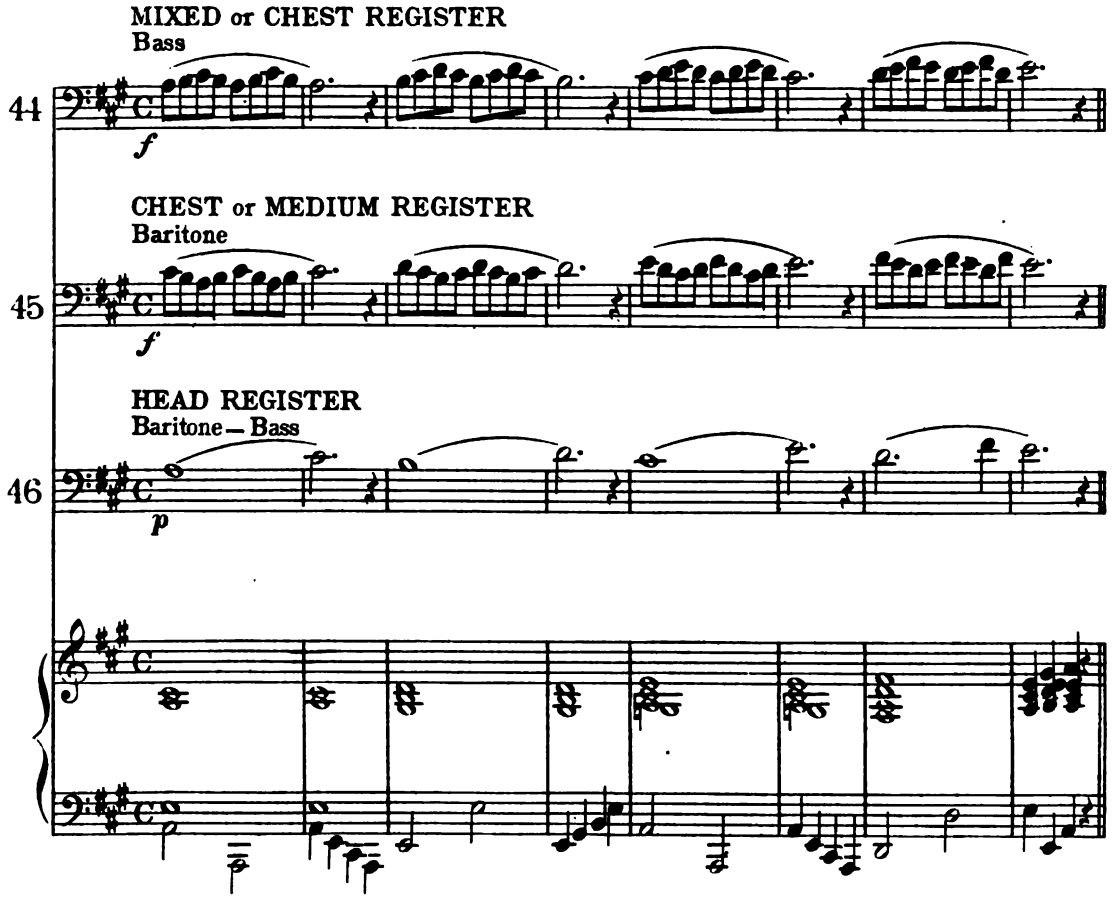
31

a Si re si re si re, do mi do mi do mi, re fa re fa re fa, mi sol mi sol mi sol.
b I E I E I E, O I O I O I, E A E A E A, I O I O I O.
c A , A , A , A ,

fa la fa la fa la, sol si sol si sol si, la do la do la do,
A A A A A A, O I O I O I, A O A O A O,
si re si re si re, do mi do mi do mi, re fa re fa re fa A
I E I E I E, O I O I O I, E A E A E A

FOURTHS
32
a Si do re mi si mi si do re mi fa do fa do re mi fa sol re sol re
b I O E I I I I O E I A O A O E I A O E O E
mi fa sol la mi la mi, fa sol la si fa si fa, sol la si do sol do sol.
I A O A I A I, A O A I A I A, O A I O O O O.

la si do re la re la, si do re mi si mi si, do re mi fa do fa do.
A I O E A E A, I O E I I I I, O E I A O A O.
A , A , A ,
FIFTHS
33
a Si do re mi fa si fa si fa, do re mi fa sol do sol do sol, re mi fa sol la re la re la
b I O E I A I A I A, O E I A O O O O O, E I A O A E A E A
c A , A , A ,
mi fa sol la si mi si mi si, fa sol la si do fa do fa do, sol la si do re sol re sol re,
I A O A I I I I I, A O A I O A O A O, O A I O E O E O E,
A , A , A ,
la si do re mi la mi la mi si do re mi fa si fa si fa
A I O E I A I A I I O E I A I A I A
A , A ,

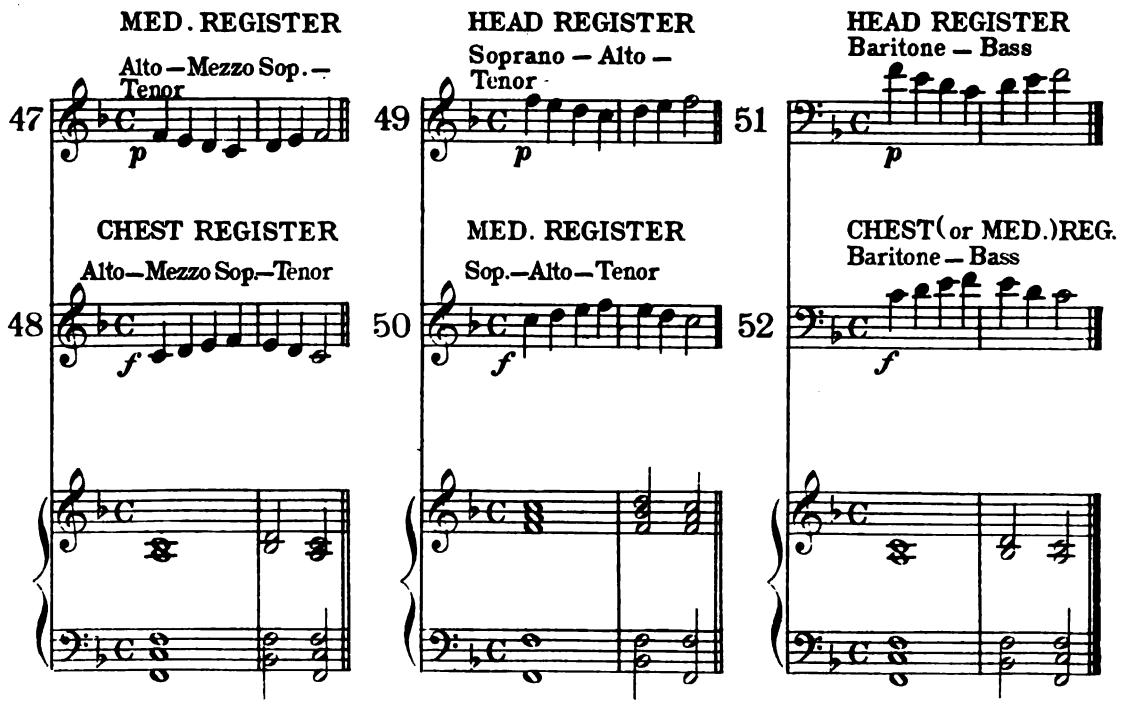
SIXTHS

A
34
a Si re fa sol fa re si, do mi sol la sol mi do, re fa la si la fa re, mi sol si do si sol mi,
b A A A A
B
fa la do re do la fa sol si re mi re si sol la do mi fa mi do la si re fa sol fa re si.
A A A A

MAJOR SEVENTHS AND OCTAVES

PART III – REGISTERS

MEDIUM REGISTER
Soprano – Alto – Tenor

HEAD REGISTER
Soprano — Tenor — Alto
38
39
p
A
CHEST REGISTER
Alto — Mezzo Soprano — Tenor
40
41
mf

CHEST REGISTER— Bass
CHEST (or medium)— Baritone
42
43
mf
A



CHANGE OF REGISTERS



EXERCISES ADVANCED COURSE

PART IV – TONE BLENDING

LEGATO SCALE – *legato attack*

53 Ascending

mf Do mi sol do *a* Ha ha ha ha Do mi sol do
b Ha ha
c A

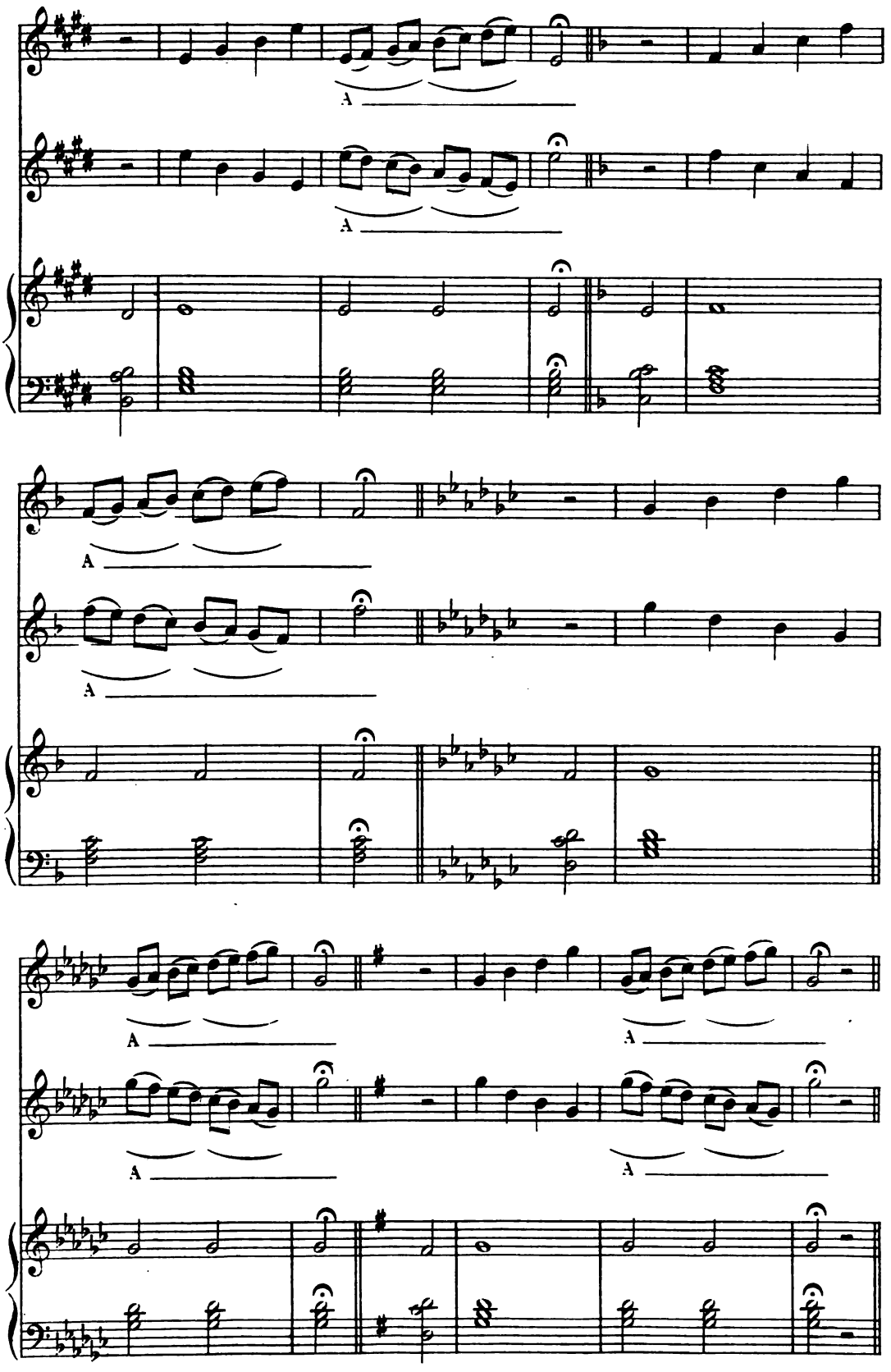
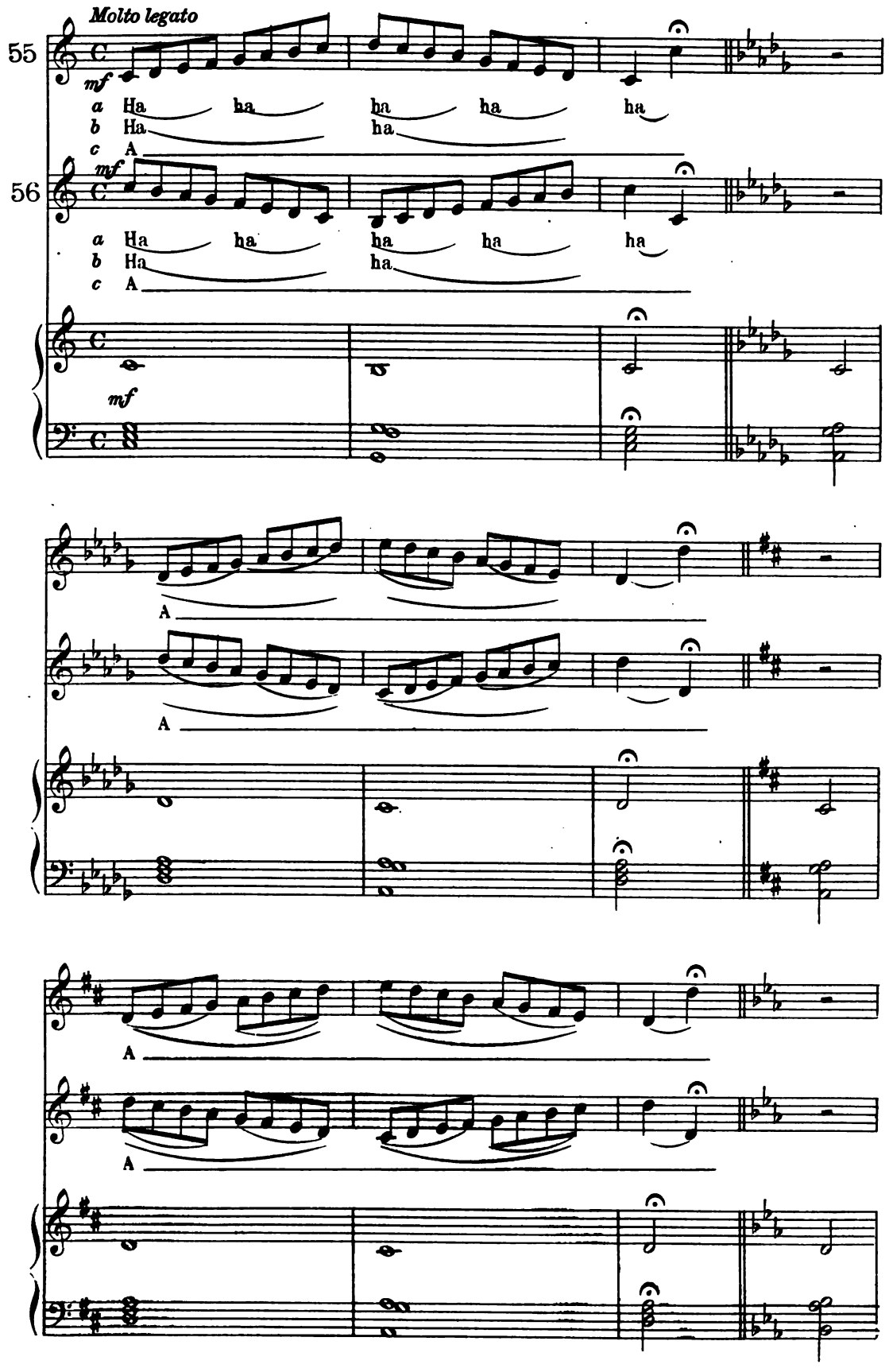
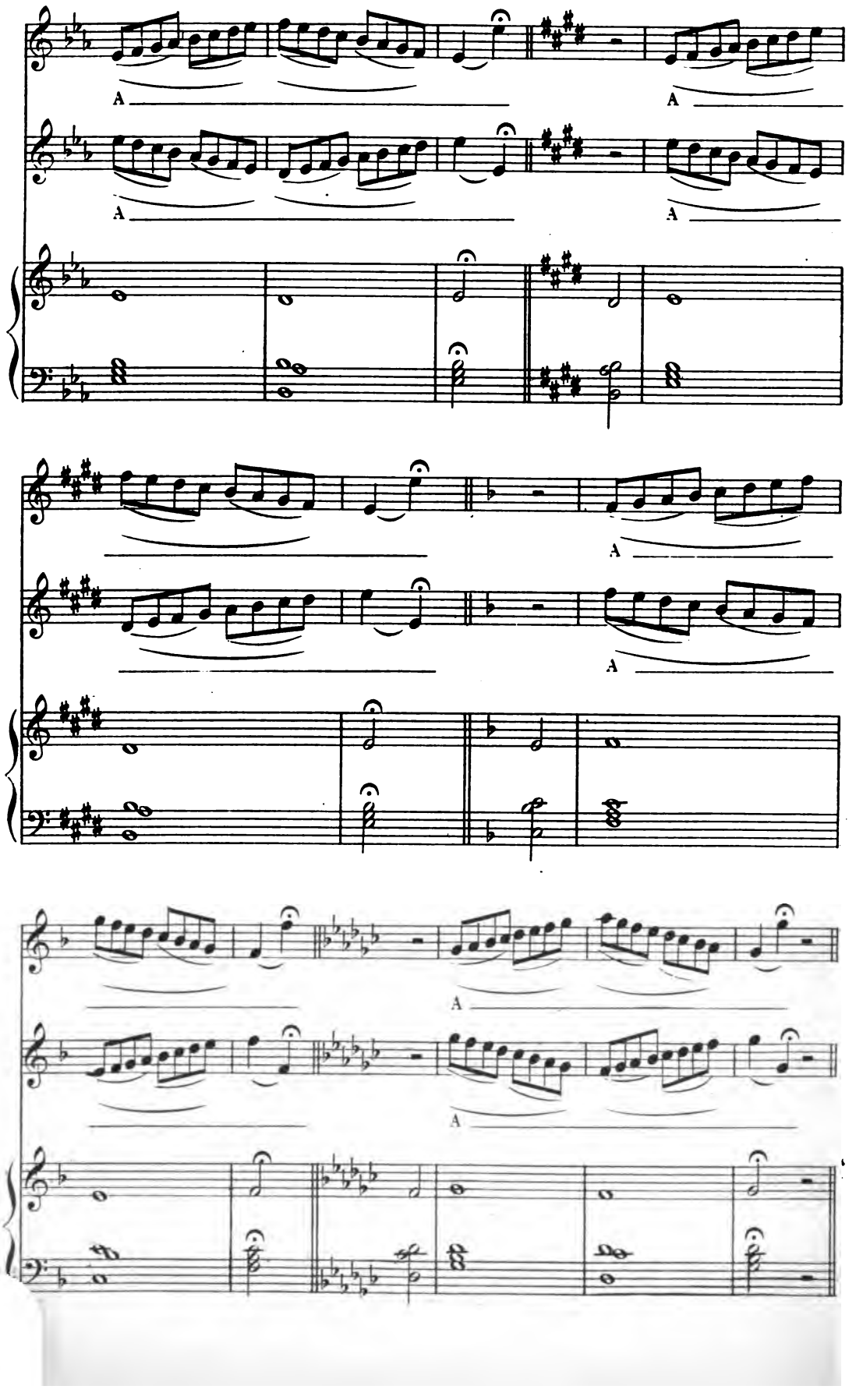
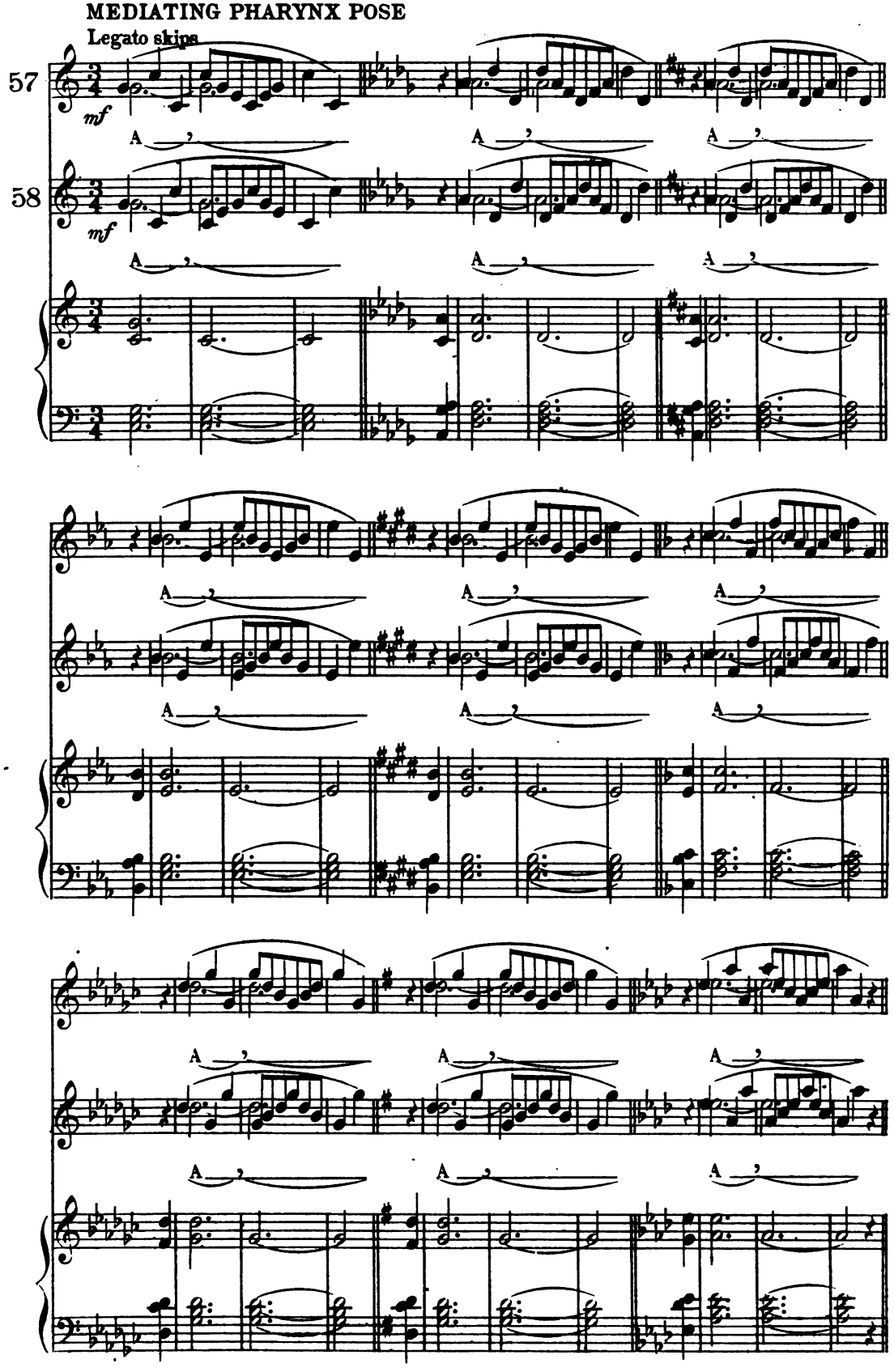
54 Descending

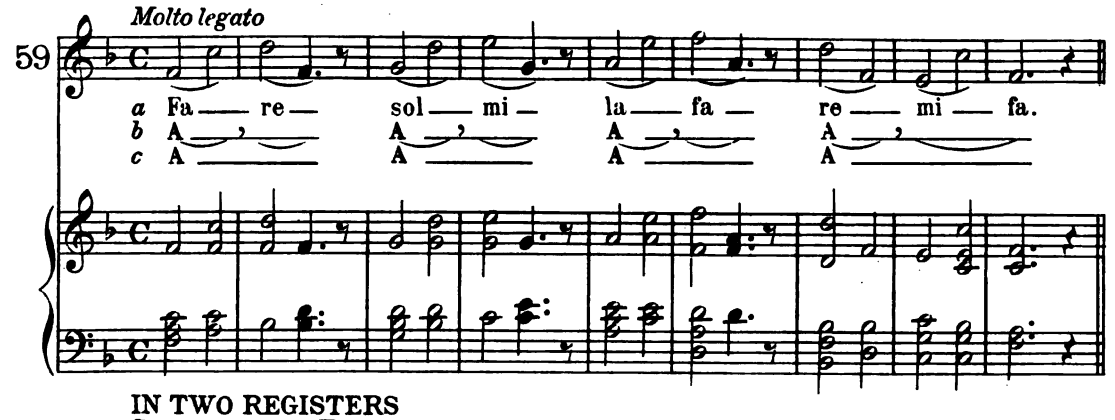
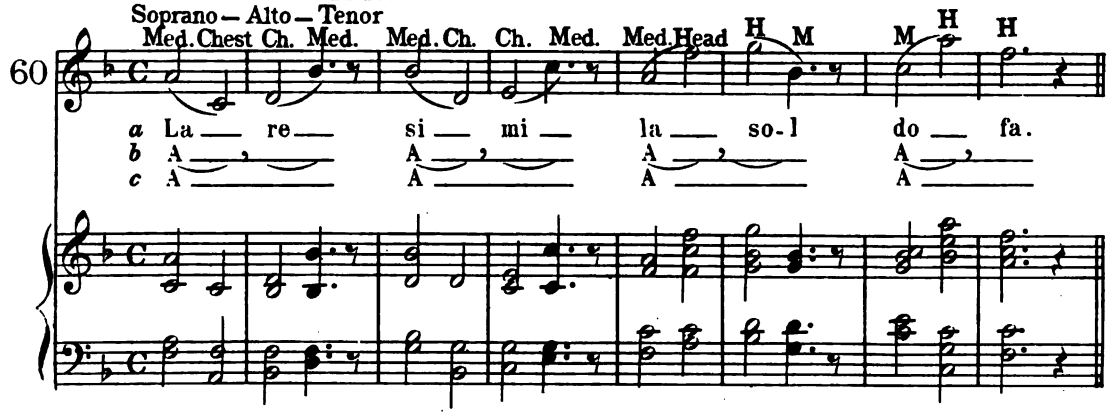
mf Do sol mi do *a* Ha ha ha ha Do sol mi do
b Ha ha
c A

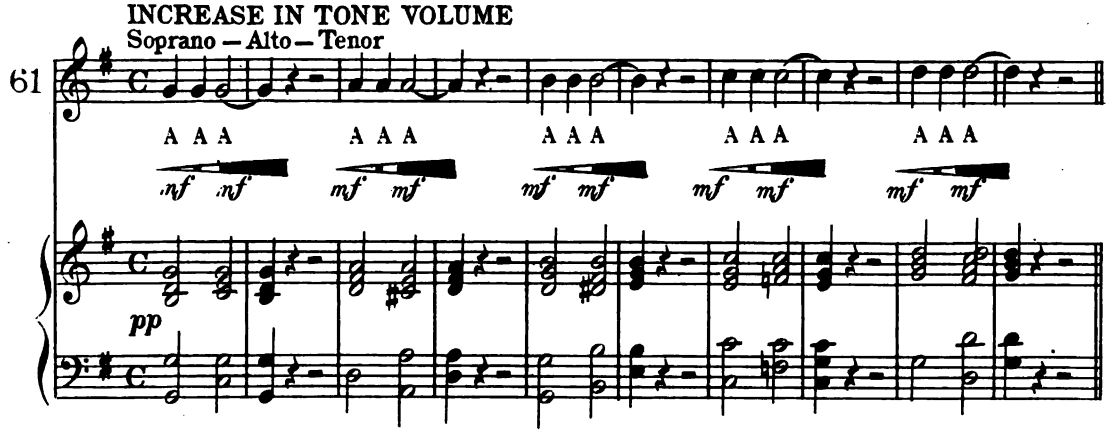
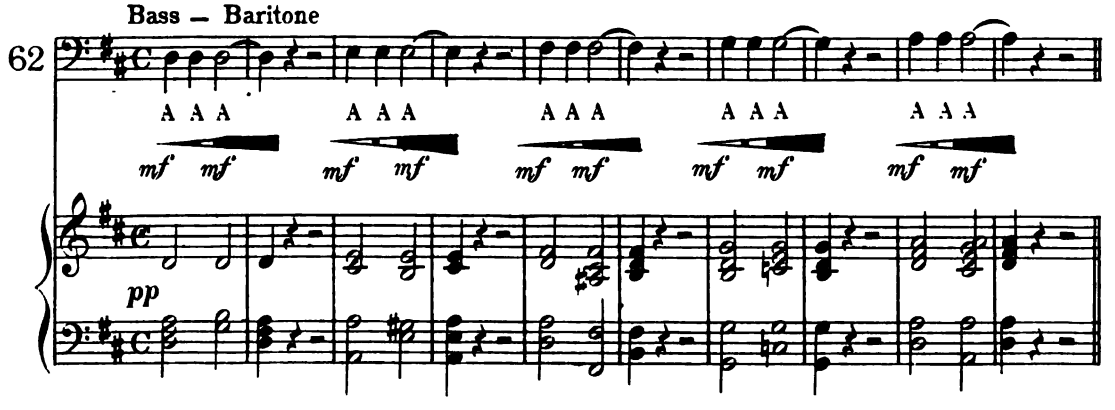
Ha ha ha ha
Ha ha
A

Ha ha ha ha
Ha ha
A

A A

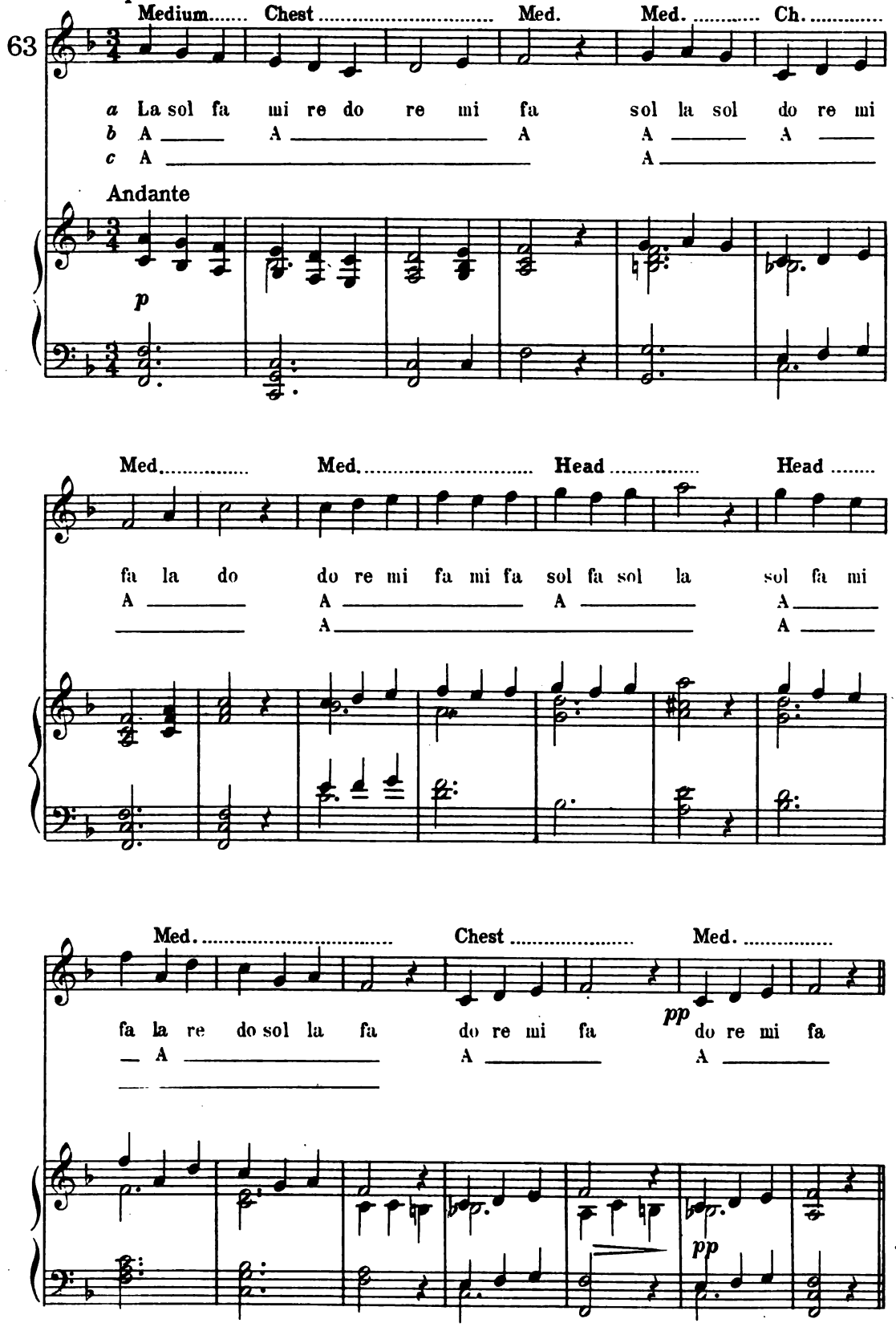
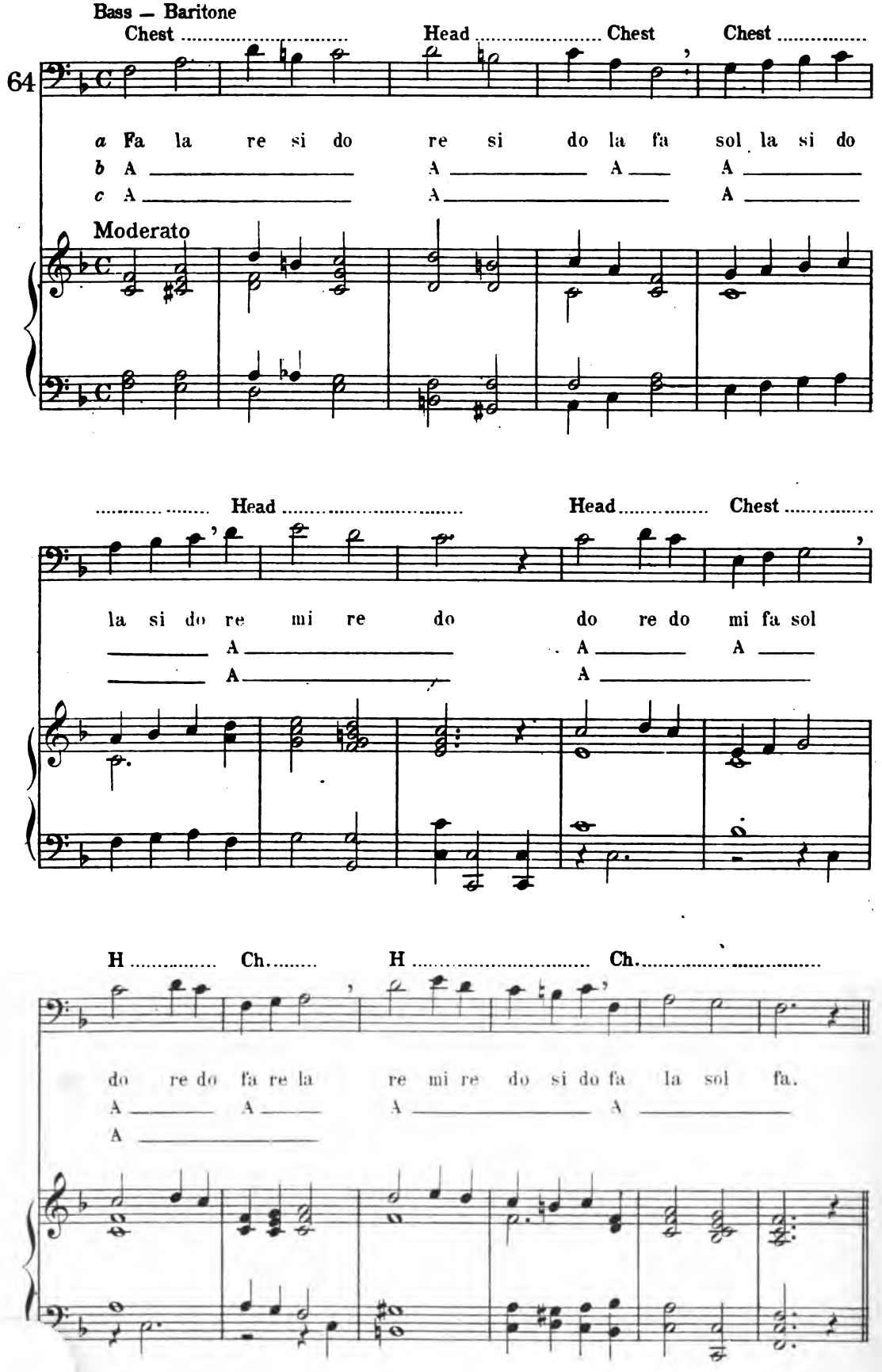
A A

A
A
A
A
A
A
A
A

Molto legato
55
mf
a Ha ha ha ha ha
b Ha ha
c A
56
mf
a Ha ha ha ha ha
b Ha ha
c A
mf
A
A
A
A

A
A
A
A
A
A
A
A

MEDIATING PHARYNX POSE
Legato skips
57
58
mf
mf
A
A
A
A
A
A
A
A
A
A
A
A
A
A
A
A
A
A

PORTAMENTO IN ONE REGISTER

IN TWO REGISTERS

INCREASE IN TONE VOLUME



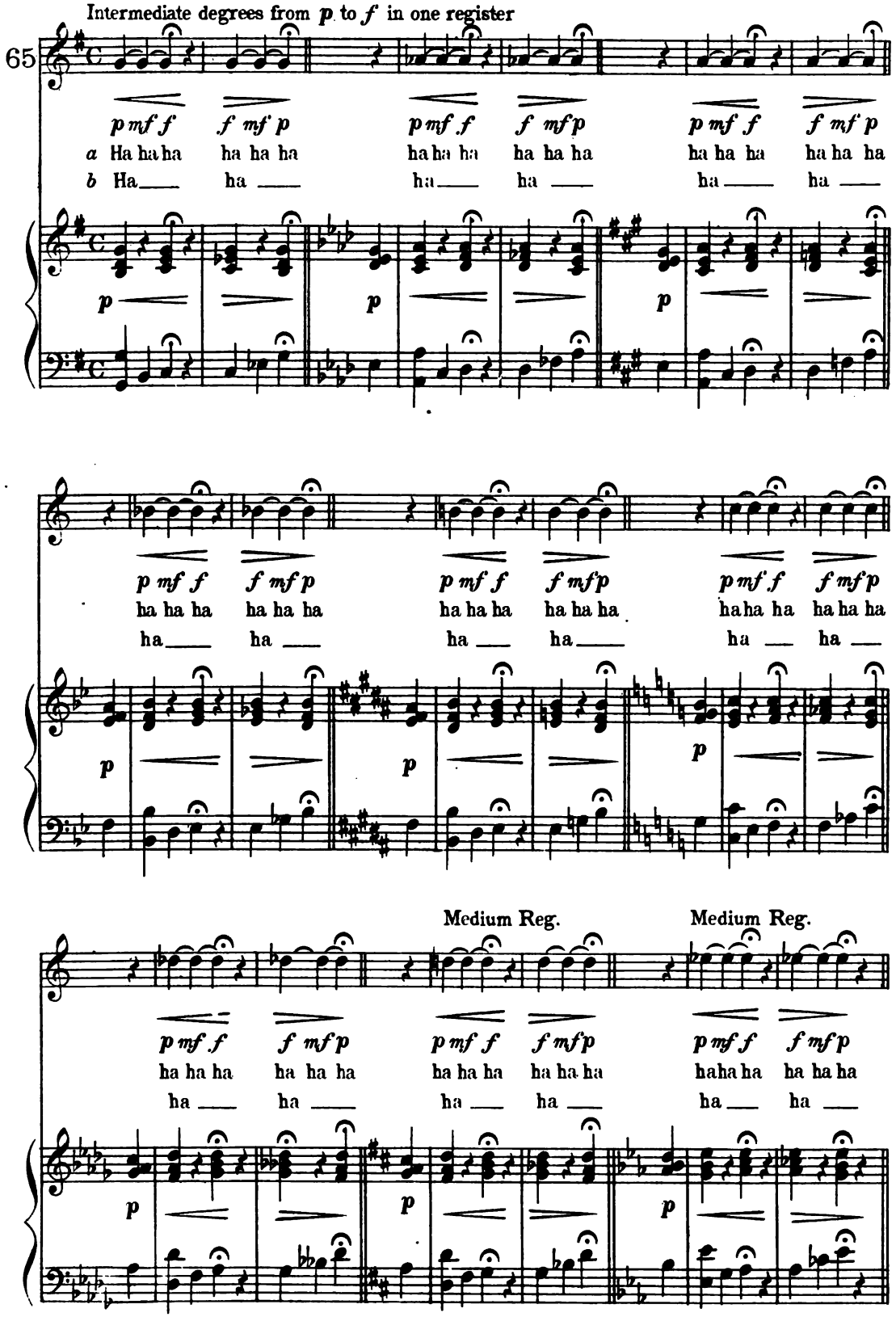
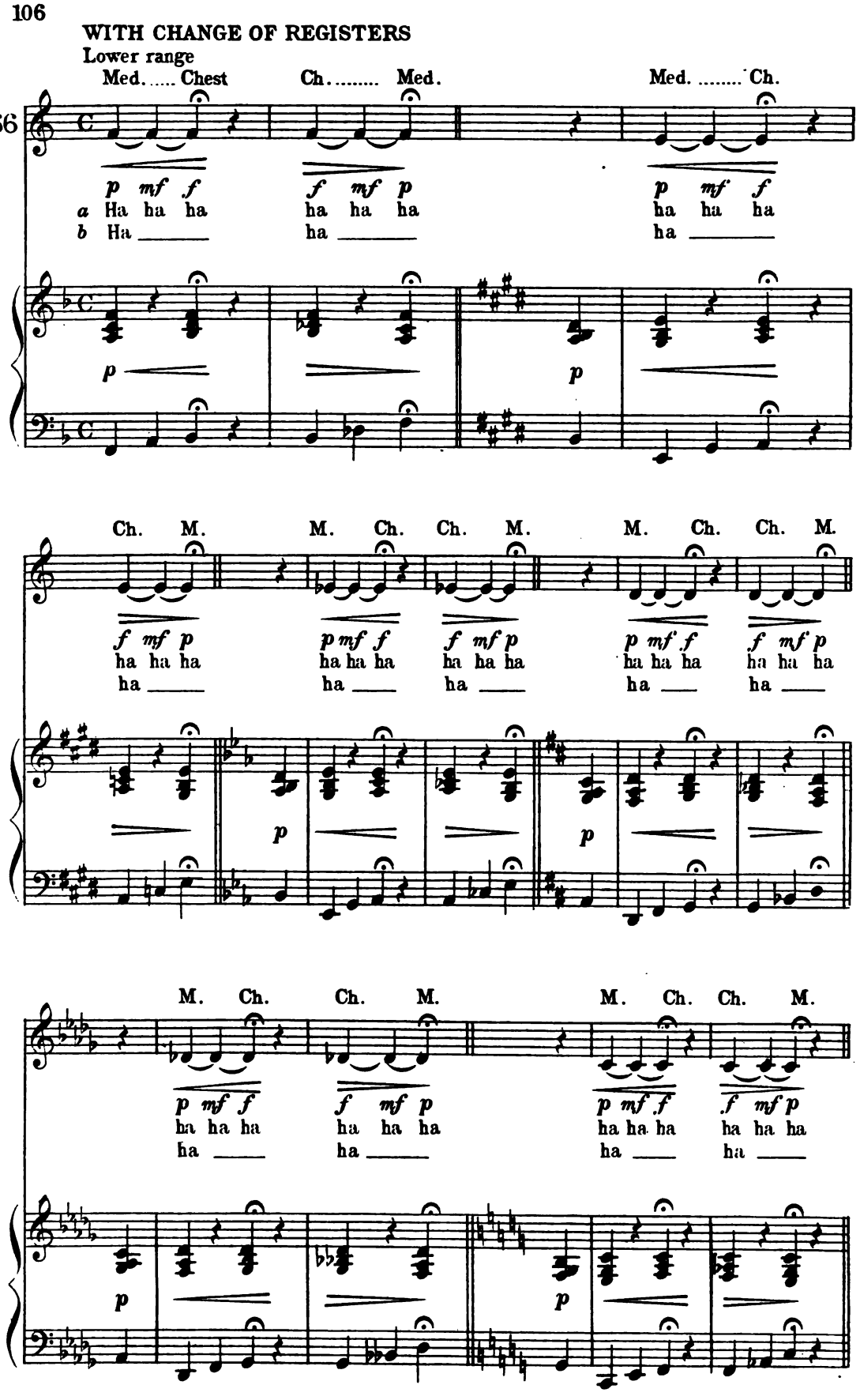
BLENDING OF REGISTERS

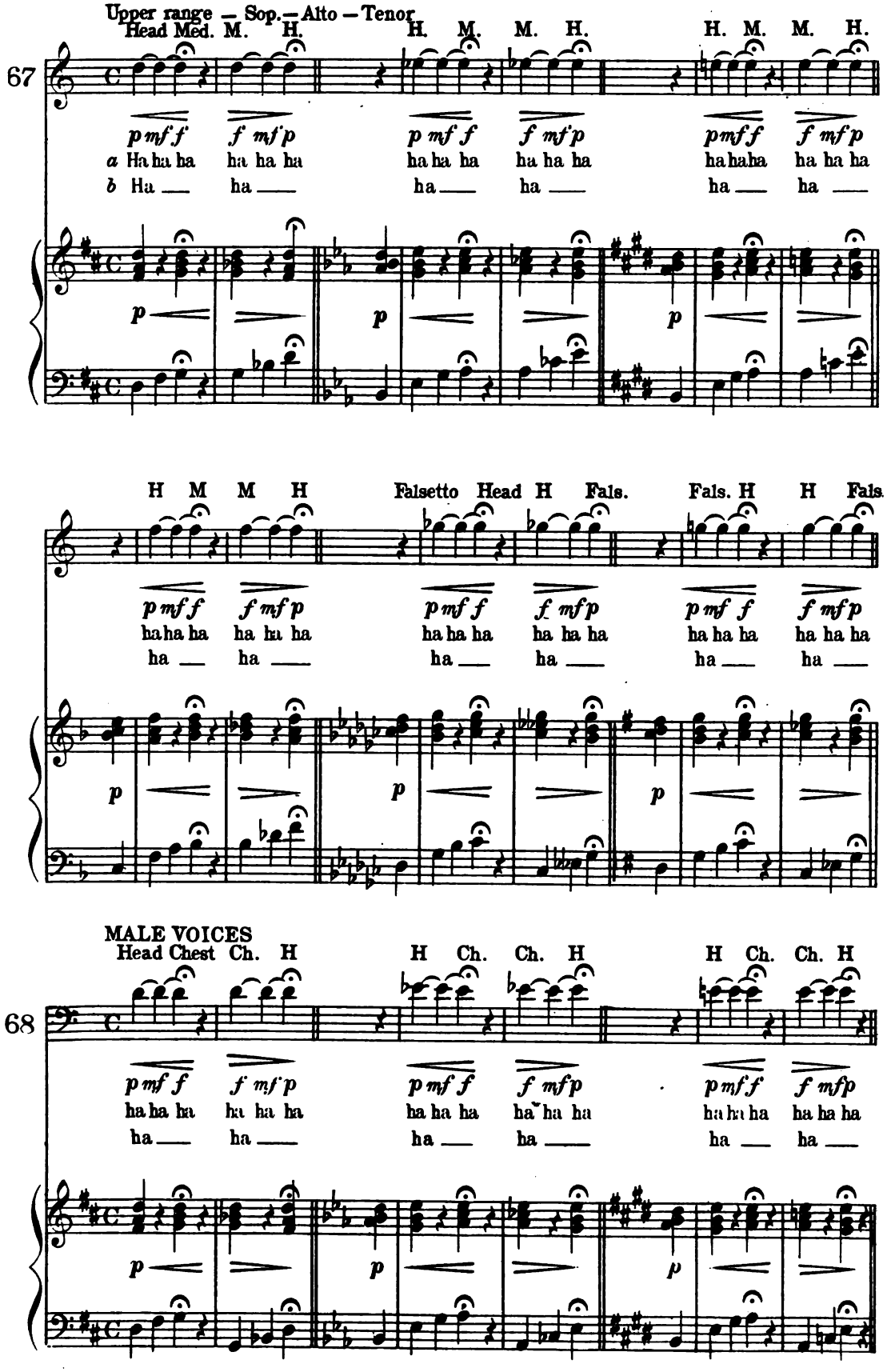
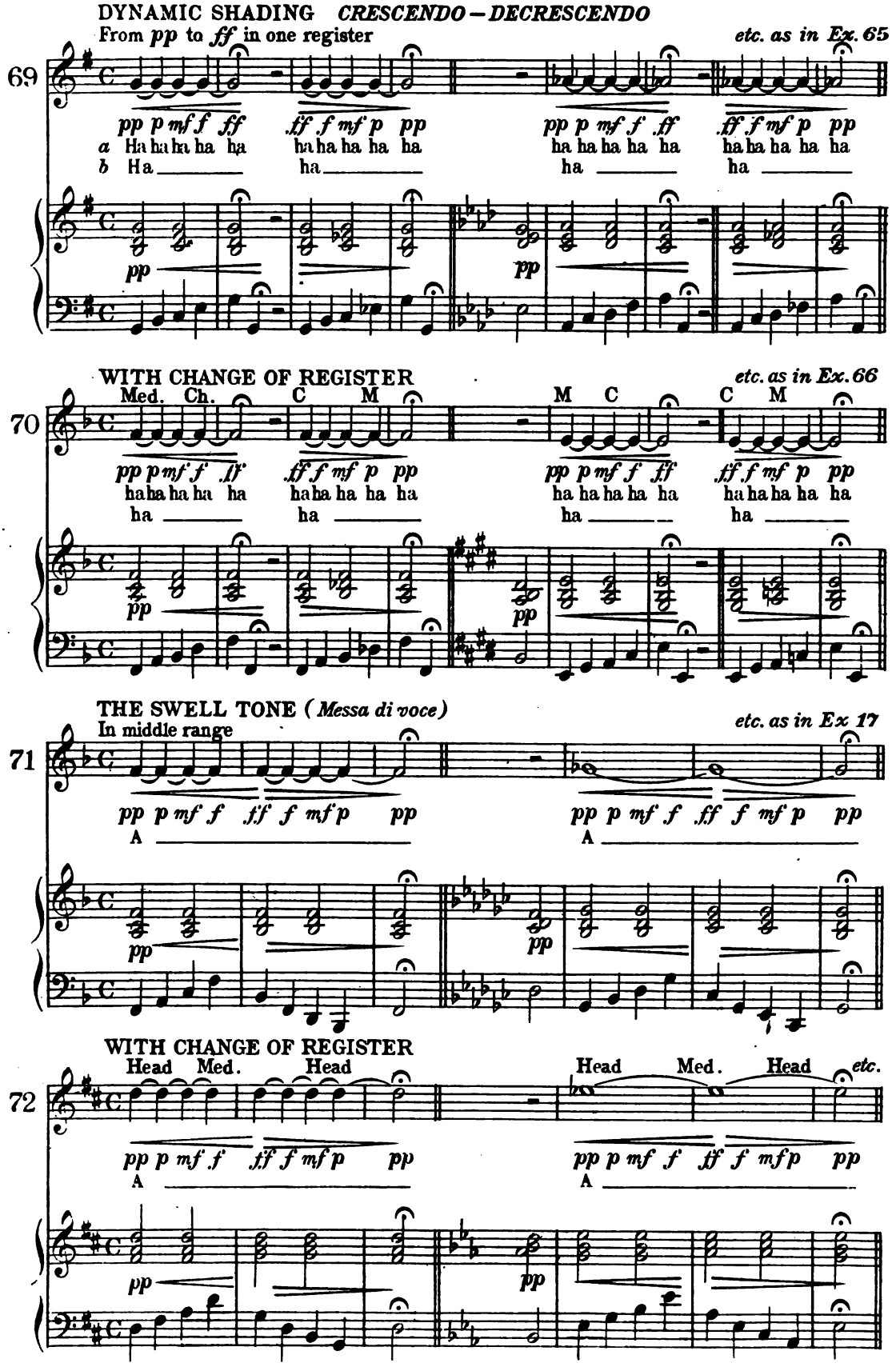
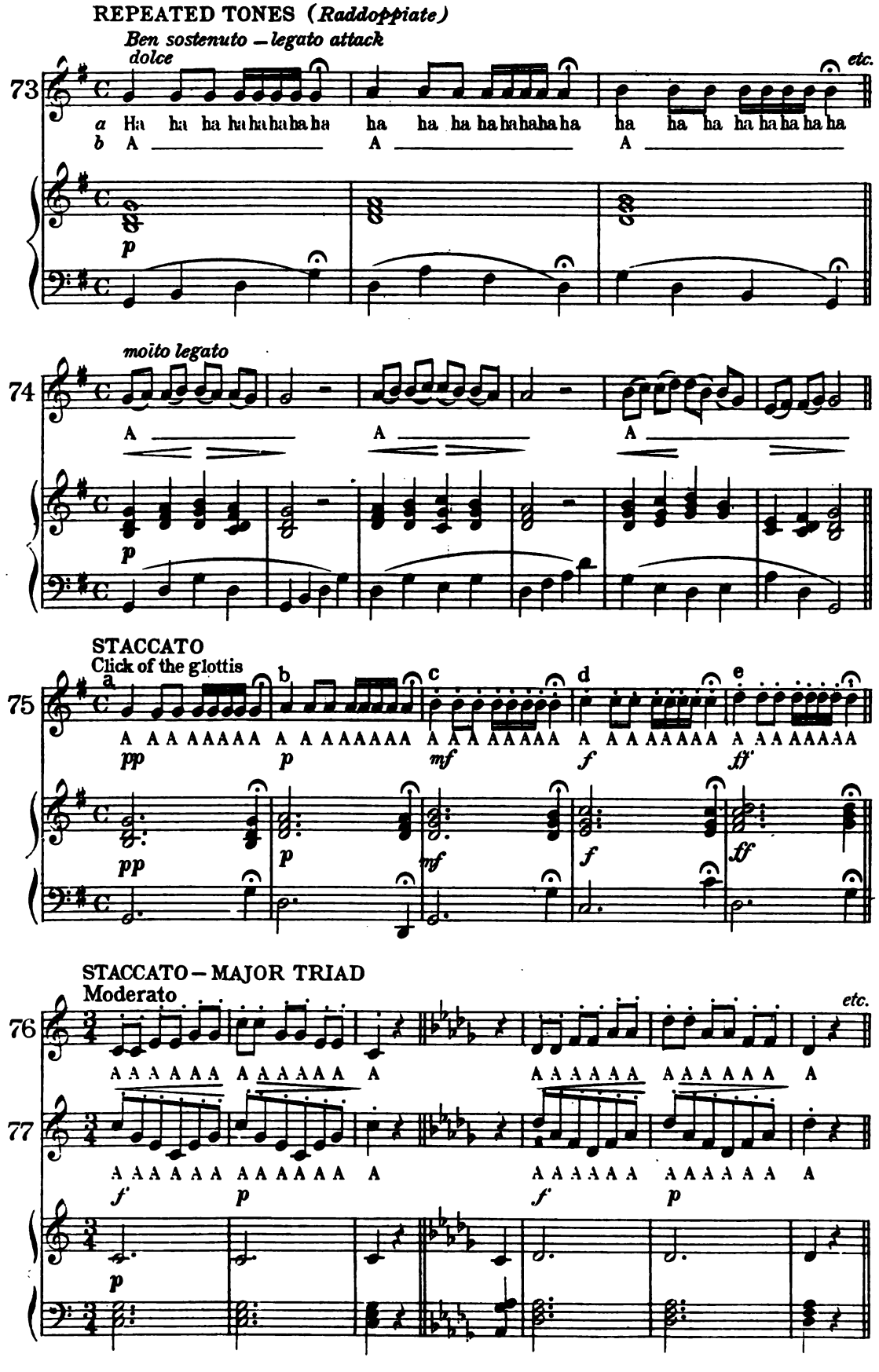
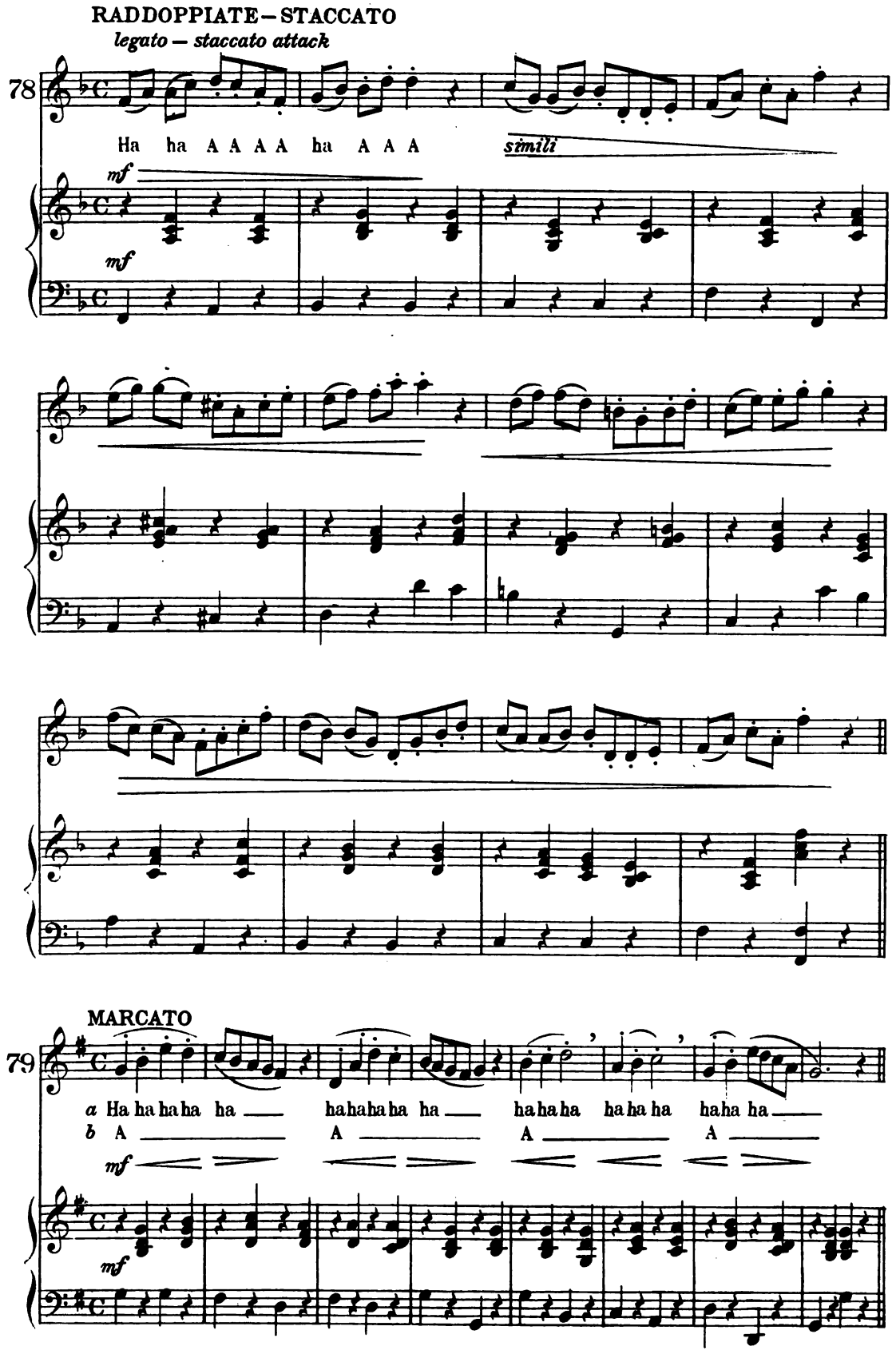
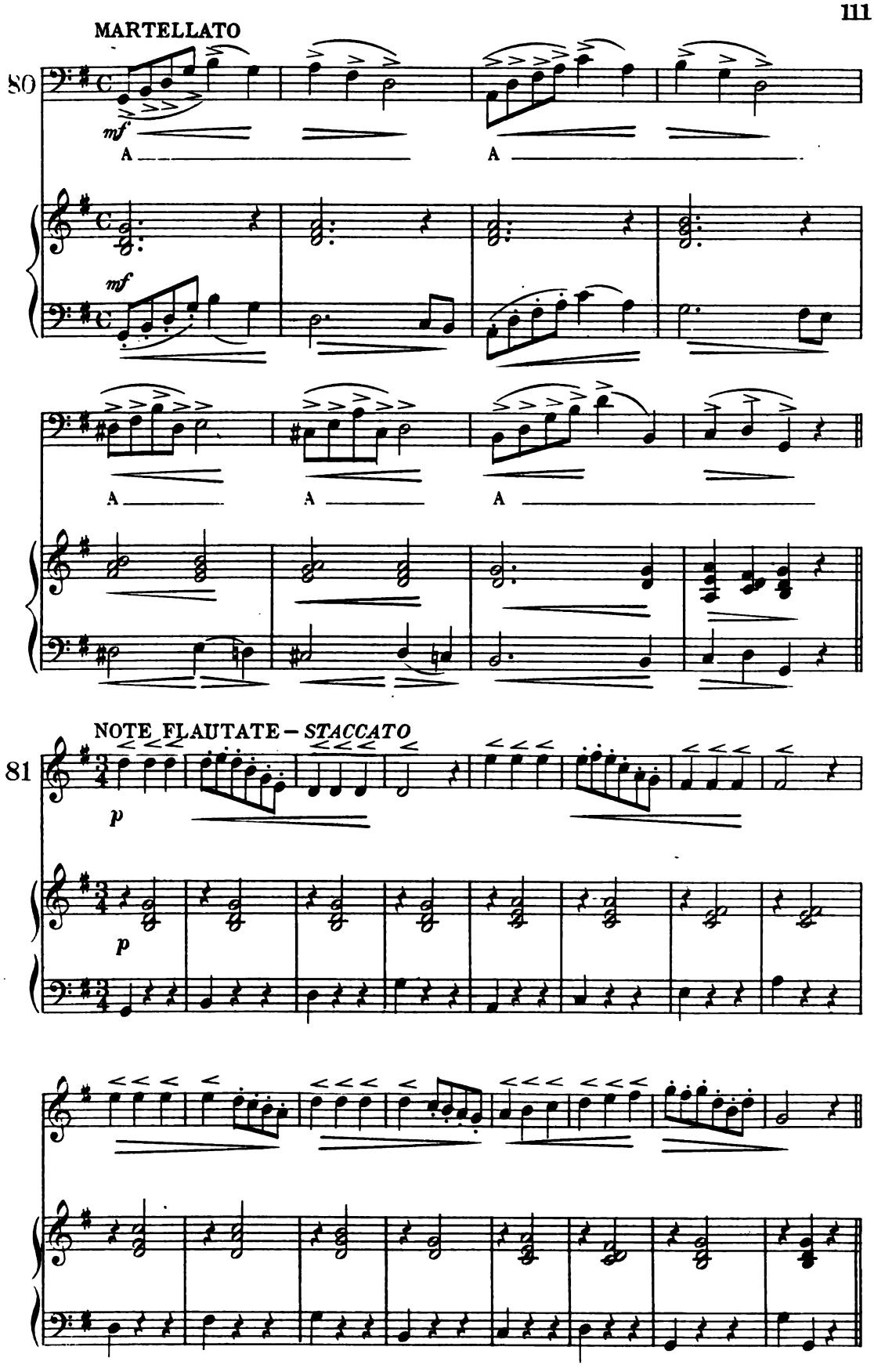
Soprano — Alto — Tenor


Medium..... Chest ..... Med. Med. ..... Ch. .....
63
a La sol fa mi re do re mi fa sol la sol do re mi
b A A A A A
c A A
Andante
p
Med..... Med..... Head ..... Head .....
fa la do do re mi fa mi fa sol fa sol la sol fa mi
A A A A
A A
Med. ..... Chest ..... Med. .....
fa la re do sol la fa do re mi fa do re mi fa
A A A
pp
pp

Bass — Baritone
Chest
Head
Chest
Chest
64
a Fa la re si do re si do la fa sol la si do
b A A A A
c A A A
Moderato
Head
Head
Chest
la si do re mi re do do re do mi fa sol
A A A
A A
H
Ch.
H
Ch.
do re do fa re la re mi re do si do fa la sol fa.
A A A A
A

PART V–FLEXIBILITY

DYNAMIC SHADING *CRESCENDO–DECRESCENDO*

Intermediate degrees from *p* to *f* in one register

65
p mf f f mf p p mf f f mf p p mf f f mf p p mf f f mf p
a Ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
b Ha___ ha ___ ha___ ha ___ ha___ ha ___
p p p
p mf f f mf p p mf f f mf p p mf f f mf p
ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
ha___ ha ___ ha ___ ha___ ha ___ ha ___
p p p
Medium Reg. Medium Reg.
p mf f f mf p p mf f f mf p p mf f f mf p
ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
ha ___ ha ___ ha ___ ha ___ ha___ ha ___
p p p

WITH CHANGE OF REGISTERS
Lower range
Med. ..... Chest
Ch. ..... Med.
Med. ..... Ch.
66
p mf f
f mf p
p mf f
a Ha ha ha
ha ha ha
ha ha ha
b Ha ____
ha ____
ha ____
Ch. M.
M. Ch.
Ch. M.
M. Ch.
Ch. M.
f mf p
p mf f
f mf p
p mf f
f mf p
ha ha ha
ha ha ha
ha ha ha
ha ha ha
ha ha ha
ha ____
ha ____
ha ____
ha ____
ha ____
M. Ch.
Ch. M.
M. Ch.
Ch. M.
p mf f
f mf p
p mf f
f mf p
ha ha ha
ha ha ha
ha ha ha
ha ha ha
ha ____
ha ____
ha ____
ha ____
p


Upper range — Sop. — Alto — Tenor
Head Med. M. H.
H. M. M. H.
H. M. M. H.
67
p mf f
f mf p
a Ha ha ha
ha ha ha
b Ha —
ha —
H M M H
Falsetto Head H Fals.
Fals. H H Fals
ha ha ha
MALE VOICES
Head Chest Ch. H
H Ch. Ch. H
H Ch. Ch. H
68

DYNAMIC SHADING *CRESCENDO—DECRESCENDO*
From *pp* to *ff* in one register
etc. as in Ex. 65
69
pp p mf f ff *ff f mf p pp* *pp p mf f ff* *ff f mf p pp*
a Ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
b Ha ha ha ha
pp *pp*
WITH CHANGE OF REGISTER
etc. as in Ex. 66
Med. Ch. C M M C C M
70
pp p mf f ff *ff f mf p pp* *pp p mf f ff* *ff f mf p pp*
ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
ha ha ha ha
pp *pp*
THE SWELL TONE (*Messa di voce*)
In middle range
etc. as in Ex 17
71
pp p mf f ff f mf p pp *pp p mf f ff f mf p pp*
A A
pp *pp*
WITH CHANGE OF REGISTER
Head Med. Head Head Med. Head *etc.*
72
pp p mf f ff f mf p pp *pp p mf f ff f mf p pp*
A A
pp *pp*

REPEATED TONES (Raddoppiate)
Ben sostenuto – legato attack
dolce
etc.
73
a Ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
b A A A
p
moito legato
74
A A A
p
STACCATO
Click of the glottis
75
a b c d e
A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A
pp p mf f ff
pp p mf f ff
STACCATO – MAJOR TRIAD
Moderato
etc.
76
A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A
77
A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A
f p f p
p

RADDOPPIATE – STACCATO
legato – staccato attack
78
Ha ha A A A A ha A A A
simili
mf
mf
MARCATO
79
a Ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha ha
b A A A A
mf
mf

MARTELLATO
80
mf
A
A
mf
A
A
A
NOTE FLAUTATE – STACCATO
81
p
p

PART VI—EMBELLISHMENTS

APPOGGIATURA

Andante

82

A

p

B

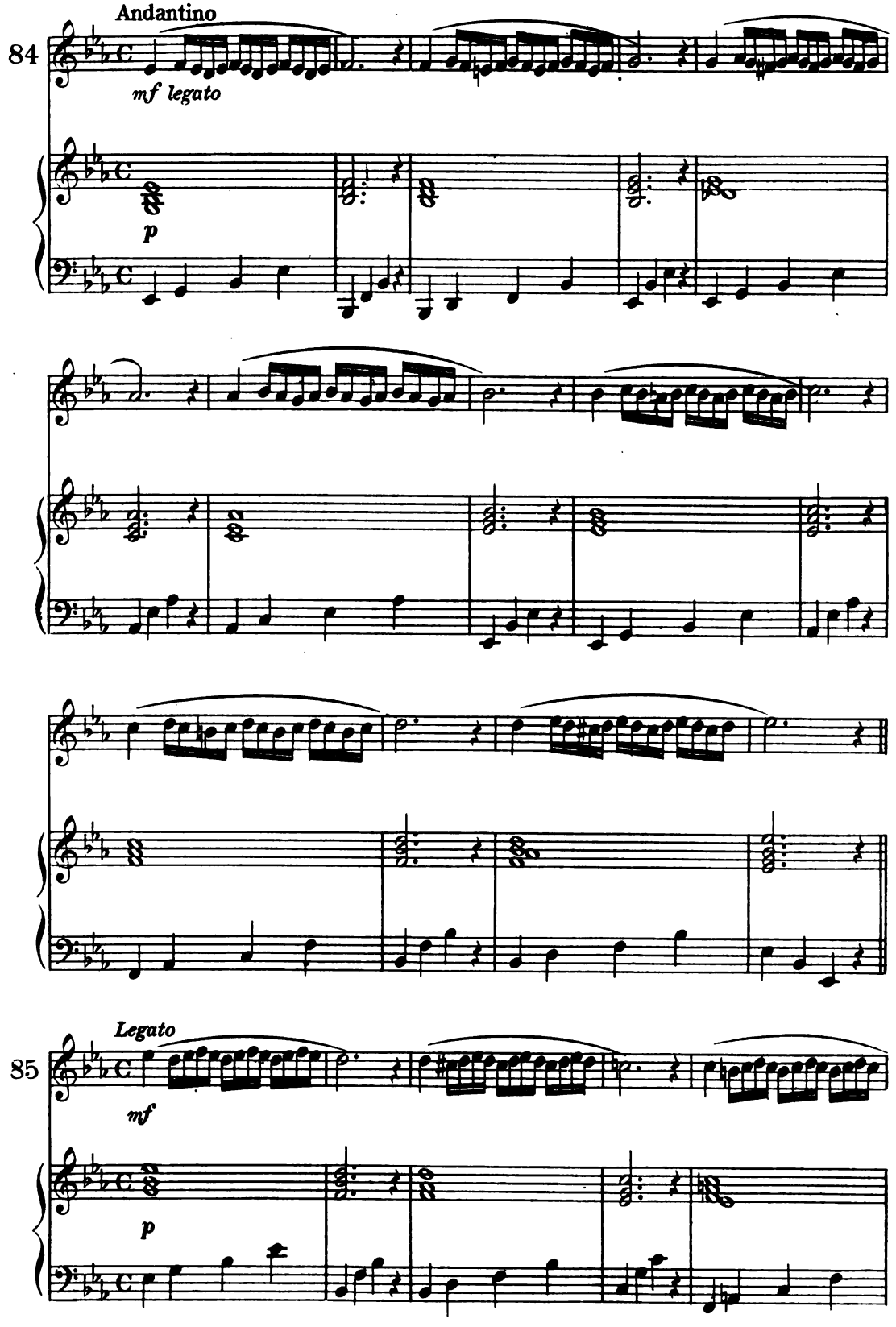
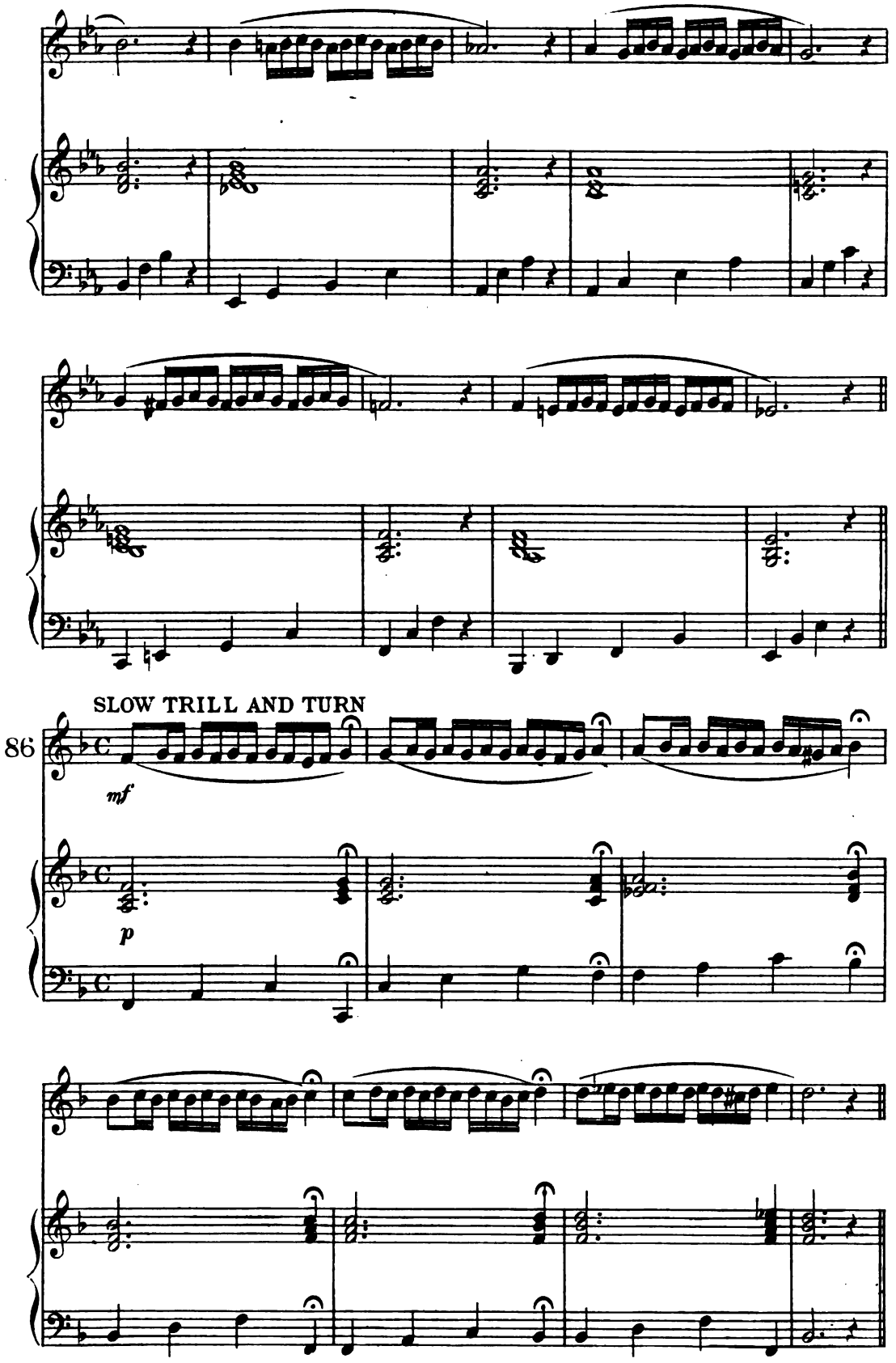
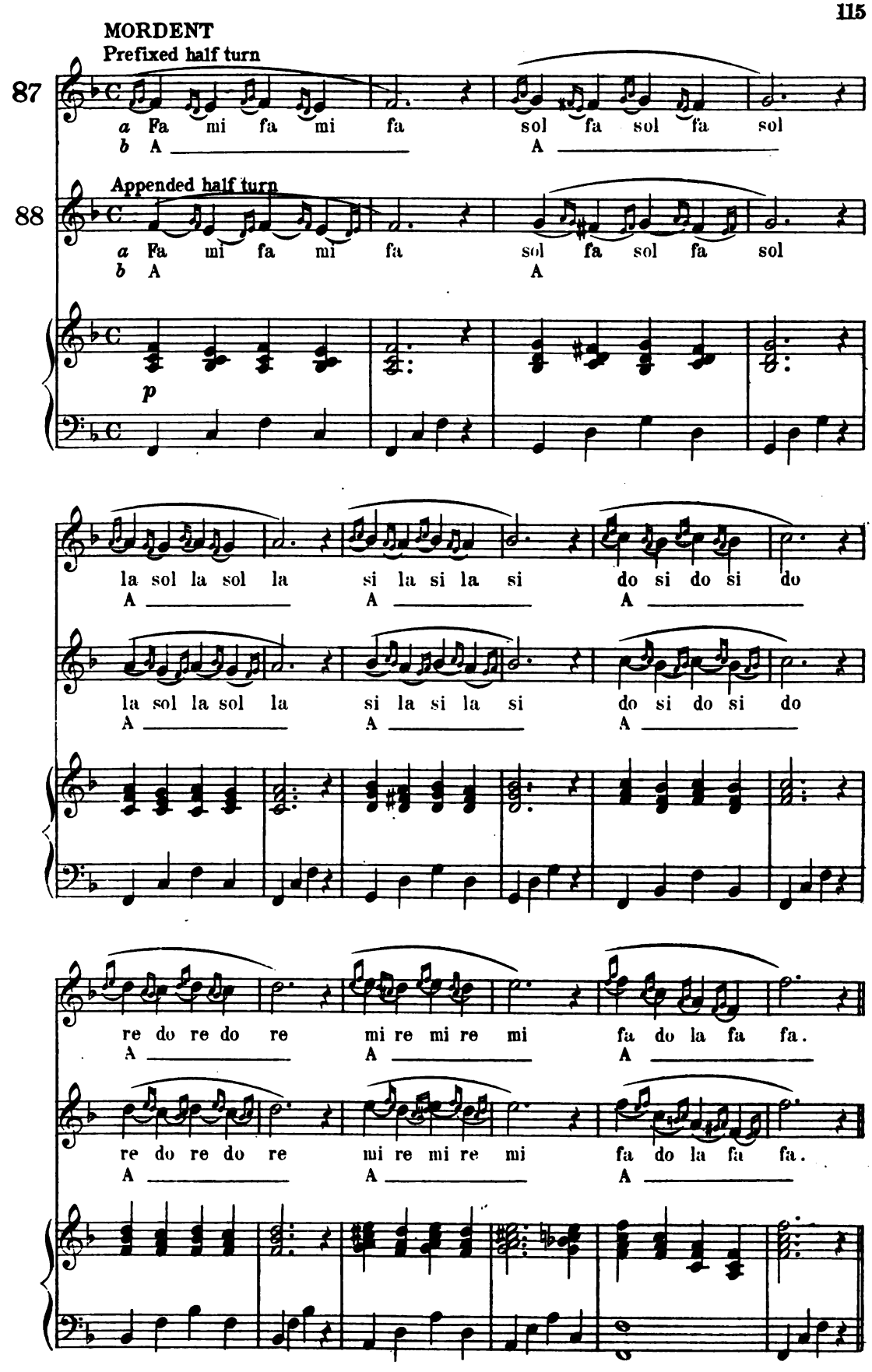
p

THE TURN *Grupetto*

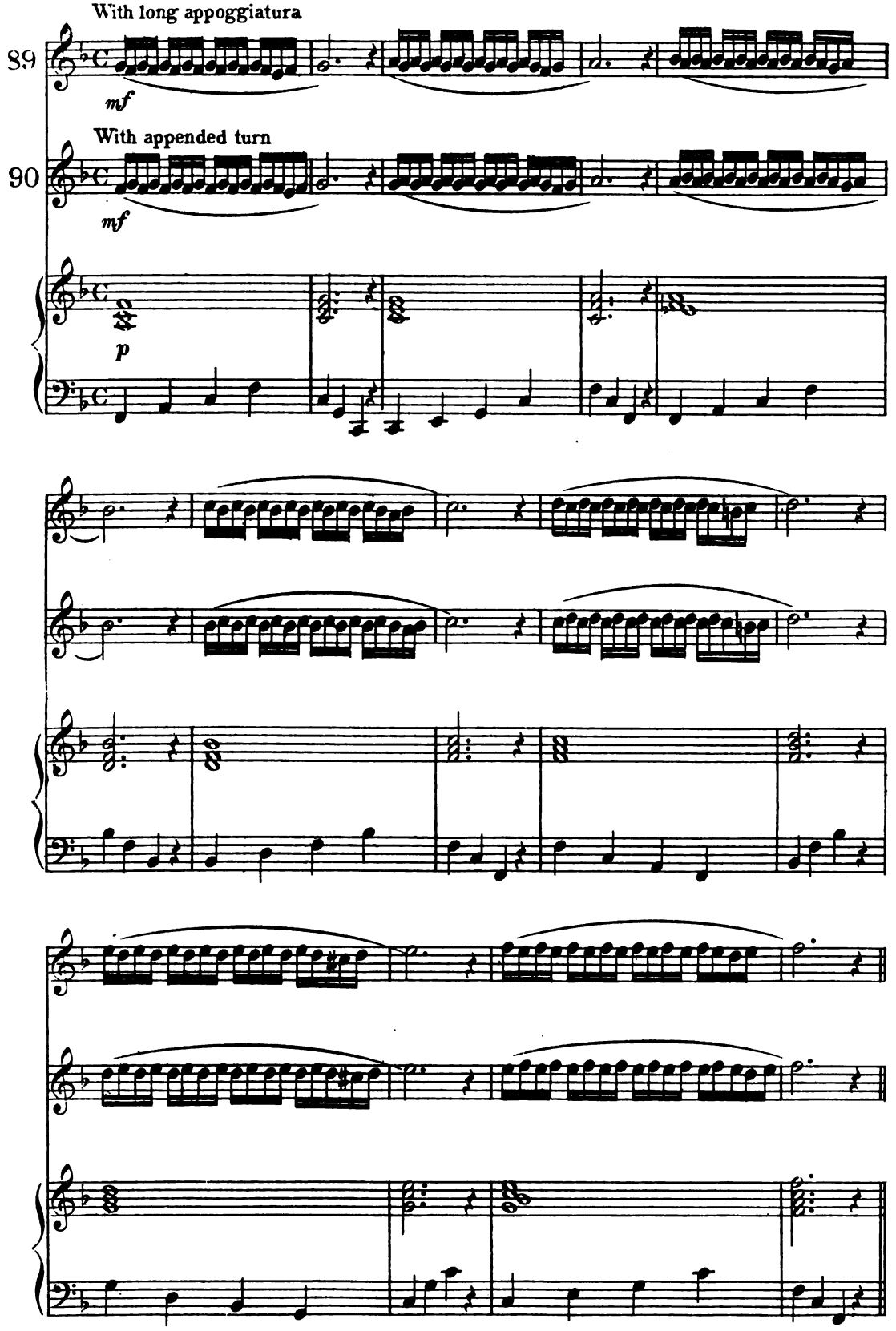
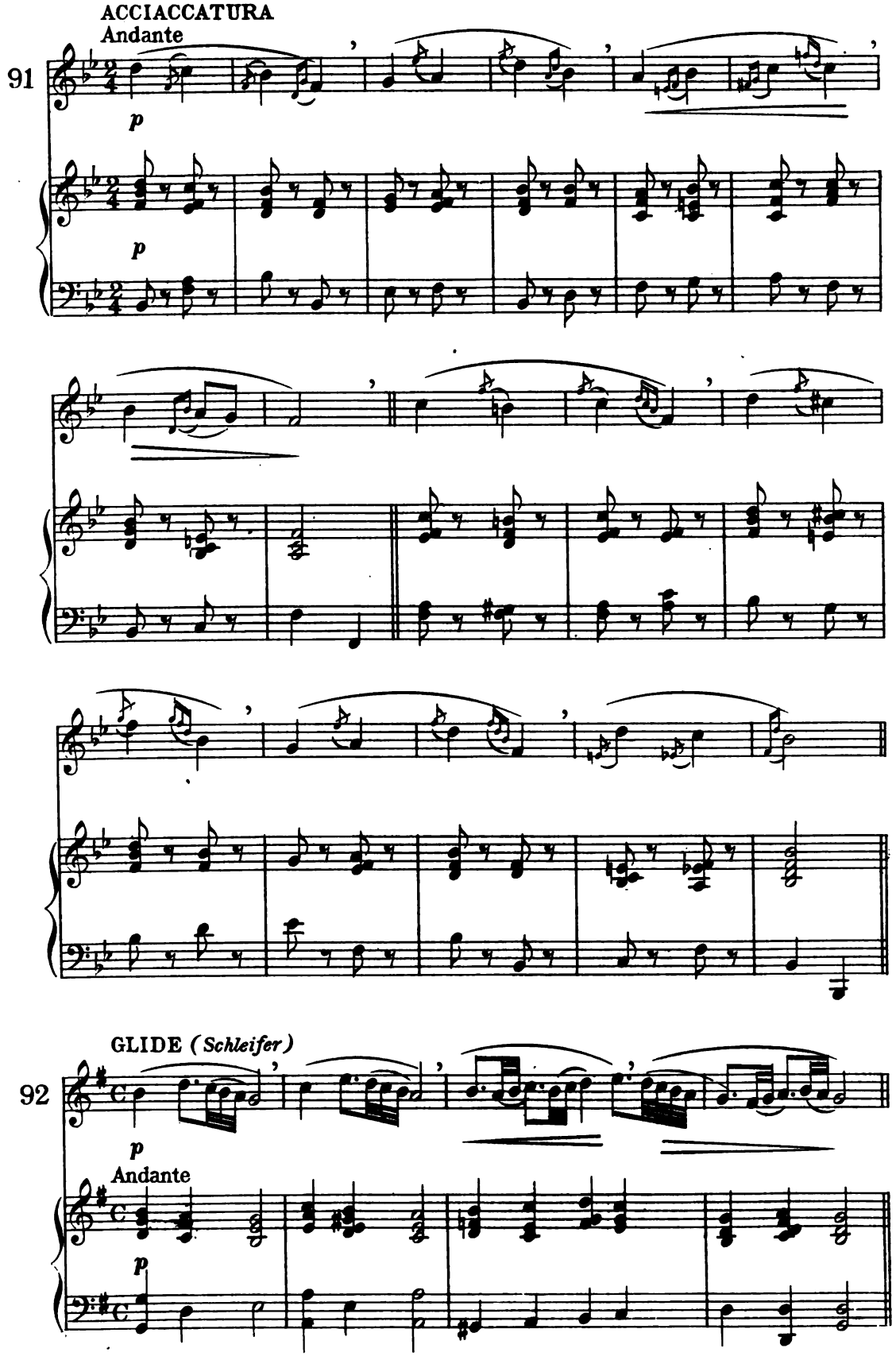
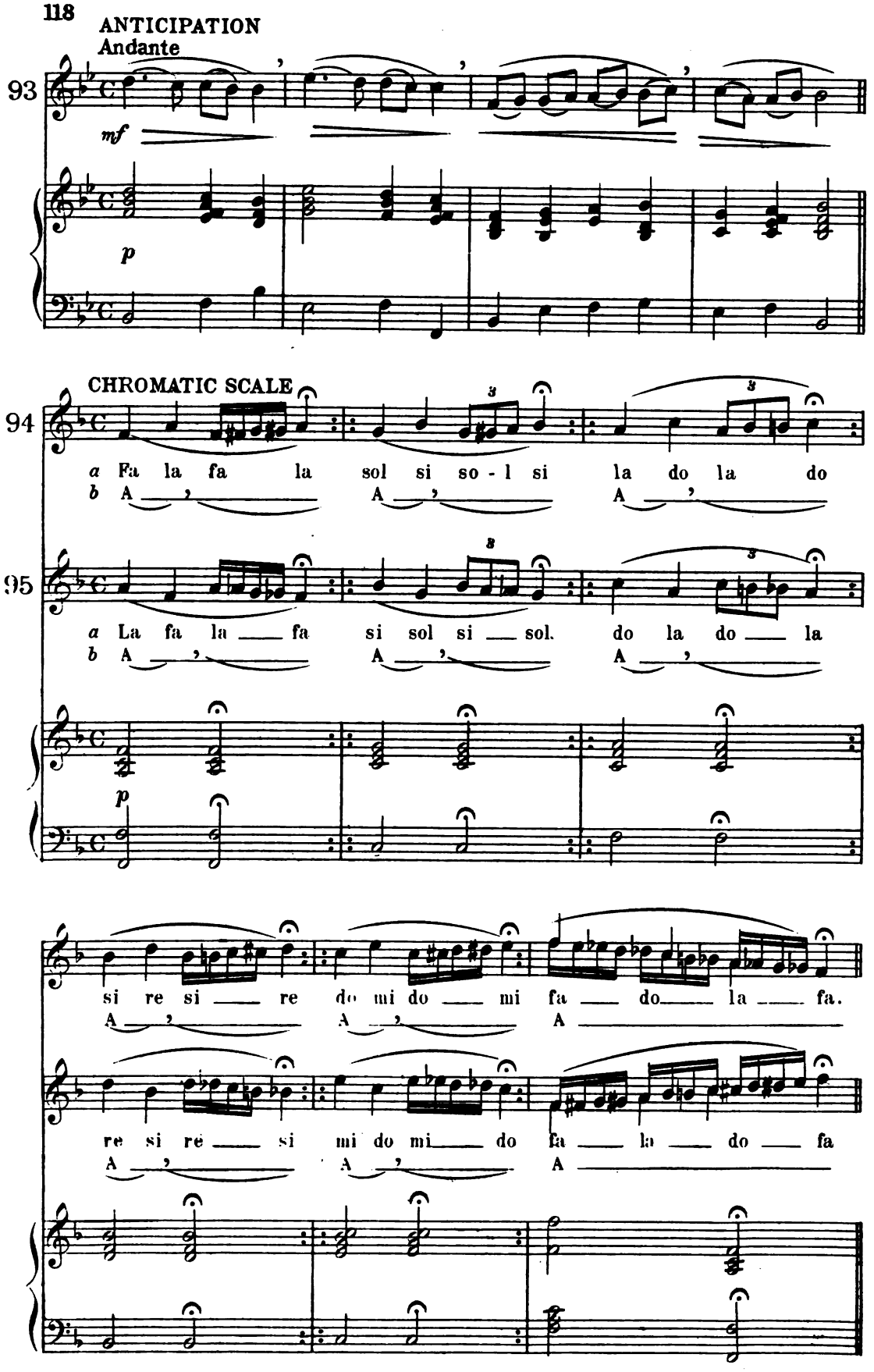
legato

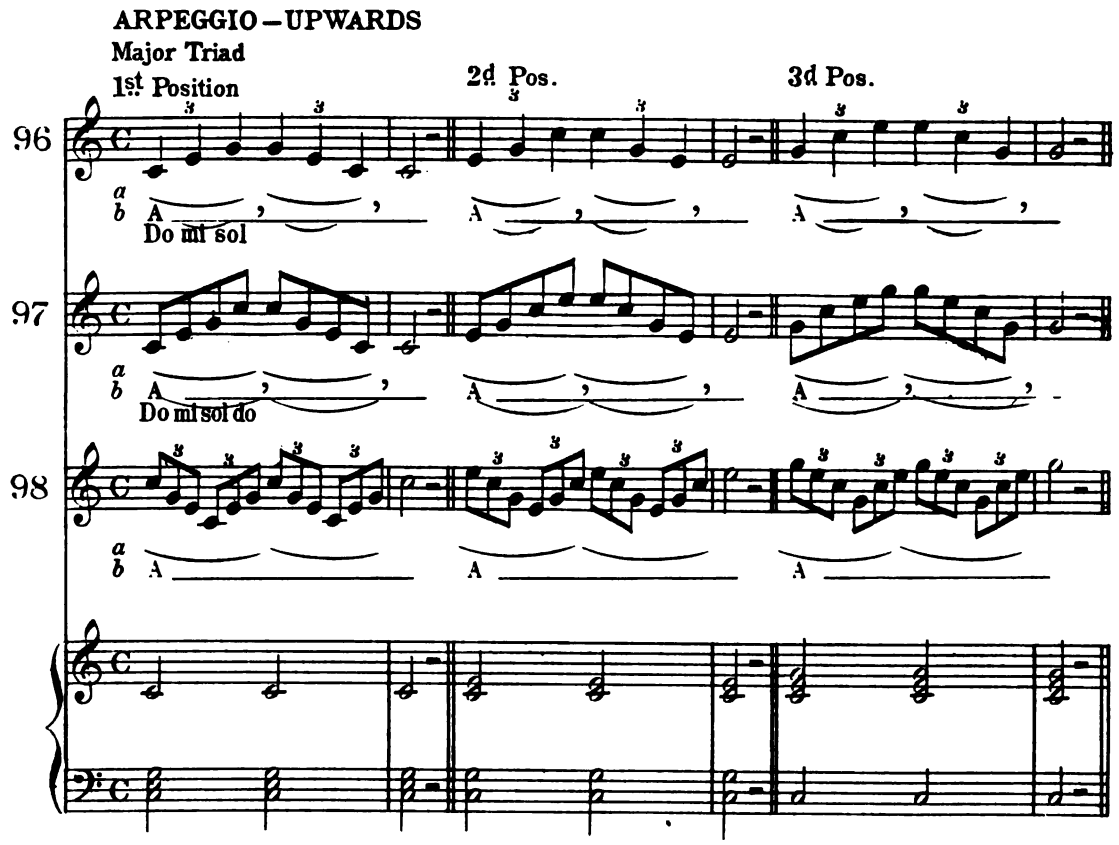
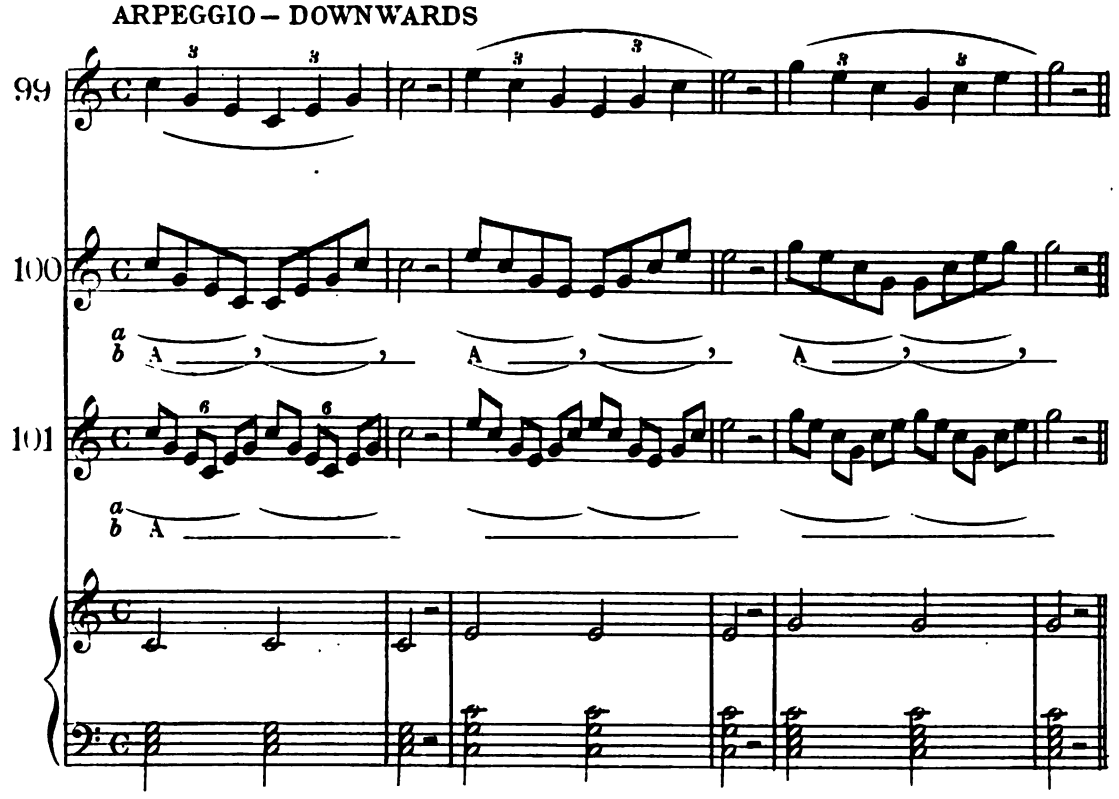
83

mf

FLEXIBILITY OF POCKET BANDS

SLOW TRILL AND TURN
86
mf
p

MORDENT
Prefixed half turn
87
a Fa mi fa mi fa sol fa sol fa sol
b A A
Appended half turn
88
a Fa mi fa mi fa sol fa sol fa sol
b A A
p
la sol la sol la si la si la si do si do si do
A A A
la sol la sol la si la si la si do si do si do
A A A
re do re do re mi re mi re mi fa do la fa fa.
A A A
re do re do re mi re mi re mi fa do la fa fa.
A A A

THE TRILL. Molto sostenuto

With long appoggiatura

ACCIACCATURA
Andante
91
p
p
GLIDE (Schleifer)
92
p
Andante
p

ANTICIPATION
Andante
93
mf
p
CHROMATIC SCALE
94
a Fa la fa la sol si so - l si la do la do
b A , A , A ,
95
a La fa la fa si sol si sol. do la do la
b A , A , A ,
p
si re si re do mi do mi fa do la fa.
A , A , A
re si re si mi do mi do fa la do fa
A , A , A


ARPEGGIO – UPWARDS
Major Triad
1st Position
2d Pos.
3d Pos.
96
97
98
Do mi sol
Do mi sol do

ARPEGGIO – DOWNWARDS
99
100
101

ARPEGGIO – MINOR TRIAD

Legato

102

a

b

Domisoldo

DOMINANT SEPT CHORD

1st Pos. 2d Pos. 3d Pos. 4th Pos.

103

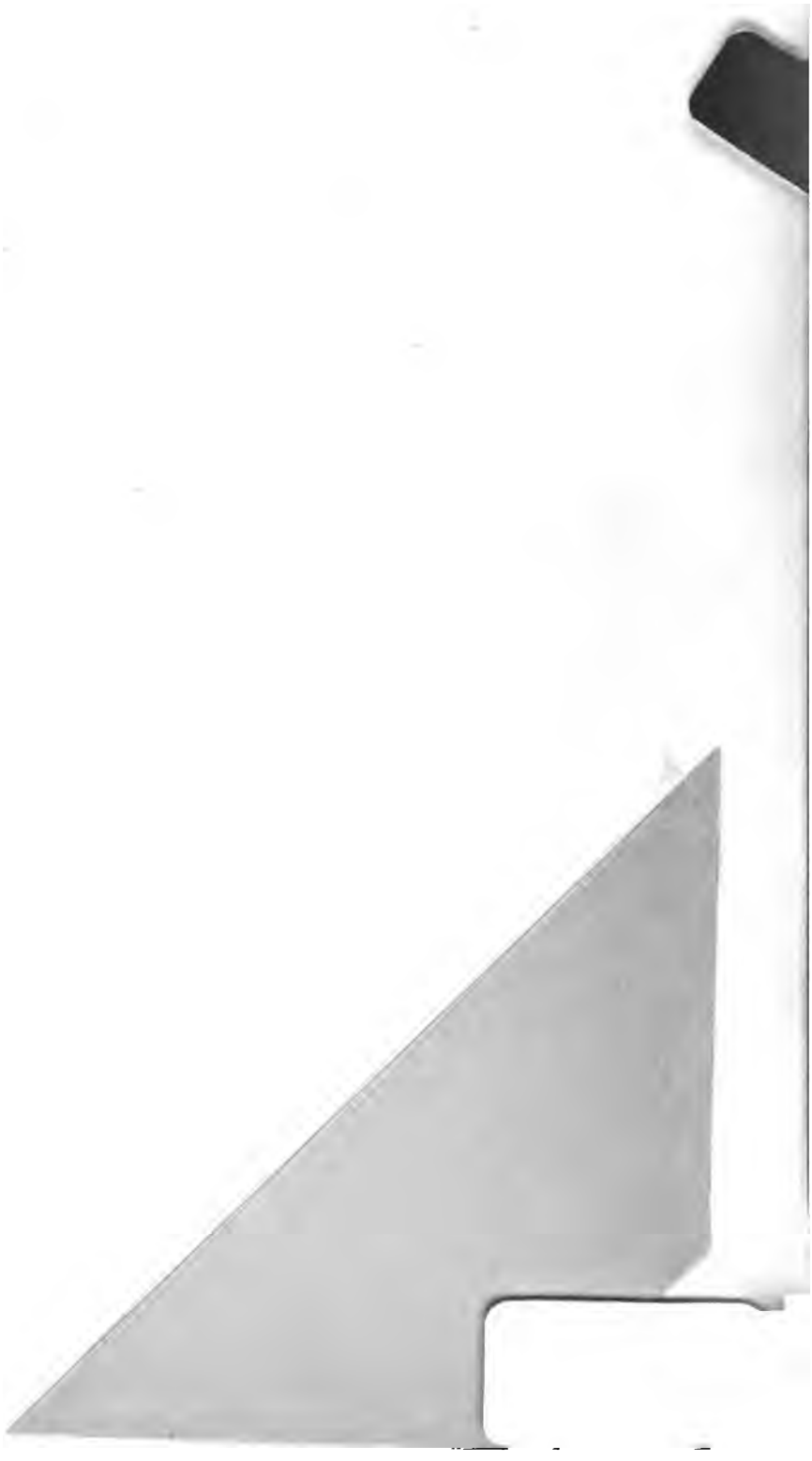
DIMINISHED SEPT CHORD

104

SYNCOPATION

105

mf

mf

3 9015 02540 0956